What the Frack Are We Talking About? The Interrelated Roles of Science, Media, and Strategic Communication in the Public Debate of Fracking in North Carolina and New York

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ABSTRACT

Kylah J. Hedding: What the Frack Are We Talking About? The Interrelated Roles of Science, Media, and Strategic Communication in the Public Debate of Fracking in North Carolina and New York
(Under the direction of Daniel Kreiss)

A scientifically complex policy issue with implications for the environment, the economy, and the community, fracking has become a hot-button political issue across the United States. Proponents of fracking point to the economic benefits and argue that it is a safe method for extracting natural gas, a cleaner alternative to coal, and an untapped resource in many areas of the United States. Opponents, on the other hand, argue that the process produces significant environmental and health effects, such as contamination of water supplies and air pollution. Yet state level legislation and regulation must be pursued even without scientific consensus. North Carolina has a small amount of shale gas available, yet fast-tracked legislation to allow fracking in the state, while New York, which sits on the natural gas-rich Marcellus Shale, put into place a ban on fracking.

Using the Advocacy Coalition Framework, I implemented a multi-method approach, incorporating content analysis of media coverage, fieldwork, and interviews with stakeholders in each state to examine the myriad roles of scientific and technical information, media, and strategic communication in the public debate of fracking. In bringing interdisciplinary research from media effects, political communication, sociology, and public relations to this framework, I have been able to analyze the different factors we must account for when studying public debate

over environmental policy issues, such the strategic communication actions of stakeholders, the role of the media, and the deliberate use of scientific and technical information in developing a policy image.

I develop a model that provides a structure for examining the main factors (scientific and technical information, media, and strategic communication) of the public debate that influences public policy for environmental issues that have strong scientific components. It also provides a mechanism for better understanding not only how the roles and influence of these factors can shift during the course of the debate, but also how they can shift in relation to each other.

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Chapter 1 - Introduction

A scientifically complex policy issue with implications for the environment, the economy, and the community, fracking has become a hot-button political issue across the United States. It has captured the interest of the media, the public, and policymakers, with actors on both sides vying to define the issue in terms of the policy implications and scientific information that advantages them most in public debate. Proponents of fracking point to the economic benefits and argue that it is a safe method for extracting natural gas, a cleaner alternative to coal, and an untapped resource in many areas of the United States. Opponents, on the other hand, argue that the process produces significant environmental and health effects, such as contamination of water supplies and air pollution. Often, there is a need to develop policy before scientific certainty has been reached, as is the case with fracking (Kester, Moyer, & Song, 2015; Pielke, Jr., 2004).

While natural gas drilling is not new in the United States, the combinations of techniques used in fracking are new (U.S. Energy Information Administration, 2011). To that end, fracking has only been recognized as a "game changer" for the U.S. energy market since around 2007 (U.S. Energy Information Administration, 2011). The jurisdiction of energy policymaking varies greatly within the United States, and it includes policymakers at the local, state and national levels (Arnold & Holahan, 2014; Davis & Hoffer, 2012). At the federal level, the U.S. Department of the Interior (DOI) issued comprehensive rules on hydraulic fracturing for public lands in March 2015, which were immediately met by several lawsuits from stakeholders on both sides of the debate (Harder & Gilbert, 2015, March 20). In June 2015, the U.S. Environmental

Protection Agency (EPA) released a comprehensive report on the effects of hydraulic fracturing on drinking water. The report raised concerns about isolated incidents of water pollution but found no systematic evidence of damage. However, the report "appears unlikely to cool the national debate over the drilling practice that has spurred huge increases in U.S. oil and gas production in the past five years [as] opponents and supporters of fracking instantly seized on portions of the report that supported their view (Warrick, 2015, June 4). As fracking has become more popular, the controversy around the topic has grown at both the state and federal levels, with increased attention from the public and the media, particularly beginning in 2010 (Mazur, 2014; Davis & Hoffer, 2012; Smith & Ferguson, 2013).

To date, the bulk of the development and management of fracking rules have occurred at the state level and are likely to remain there for the near future (Davis & Hoffer, 2012). Figure 1.1 shows where natural gas is available and which states have no economically feasible reserves, including where fracking is active and banned. While 13 of the states where natural gas is available have seen cities and counties ban fracking, New York is the first to issue a permanent, statewide ban on the practice after seven years of examination by the New York Department of Environmental Conservation (NYDEC) and the New York Department of Health (NYDOH) (Nearing, December 18, 2014). Vermont and Massachusetts have also issued fracking bans, though neither state has viable reserves (Hirji & Long, January 20, 2015), while Maryland, which has some reserves, has instituted a 2-year moratorium until October 2017 (Hicks, May 29, 2015). While Florida currently has no fracking ban, a bill that would regulate fracking died in a Senate committee in March 2016 (Call, 2016, March 1).

Figure 1.1 Fracking Operations and Bans in the United States

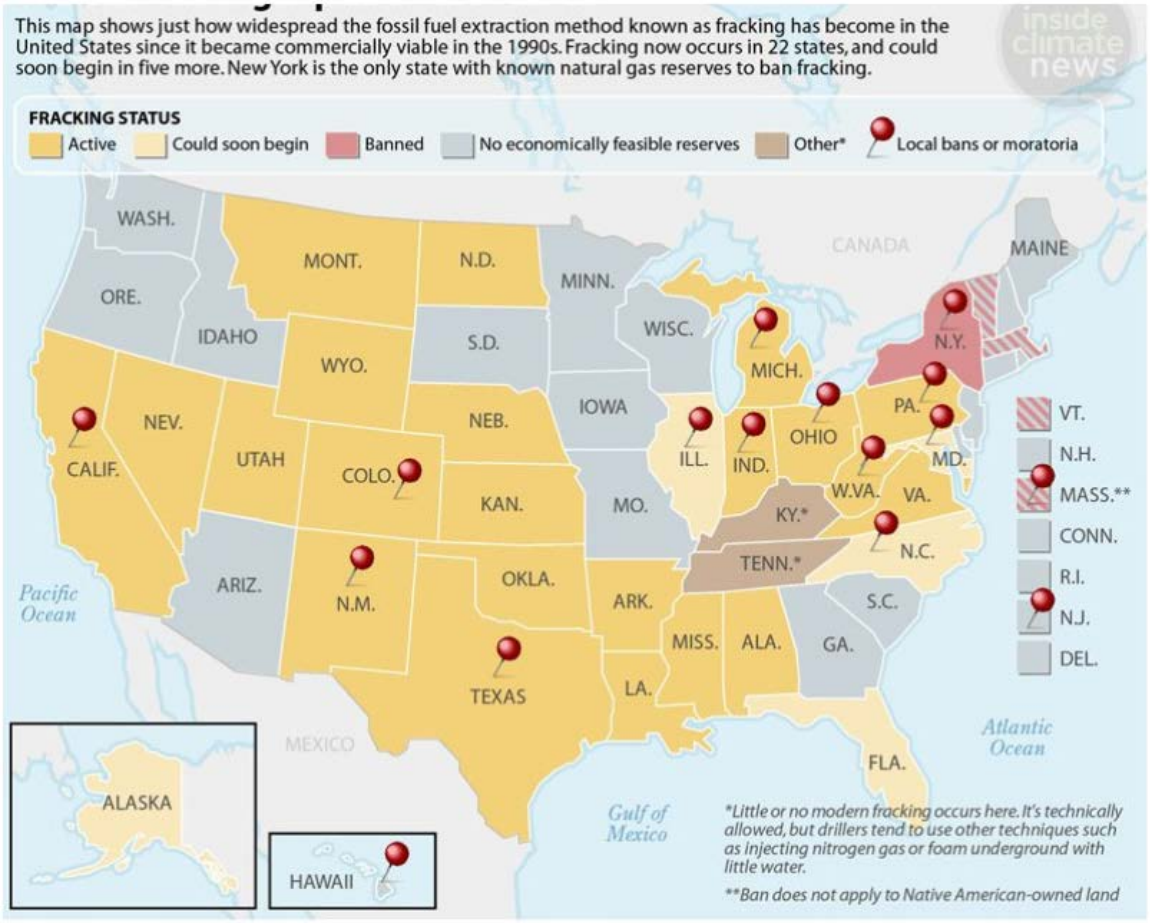


Figure 1.1. Fracking occurs in 22 states in the United States, while New York is the only state with robust natural gas resources to issue a statewide ban (Hirji & Song, 2015, January 20)

Of the remaining states, Kentucky and Tennessee technically allow fracking, though the industry uses other forms of natural gas extraction in each state. In Illinois, then-Gov. Quinn signed a law to regulate fracking in June 2013, and it was expected to begin in early 2015 (Wernau, January 24, 2015). However, despite more than $100 million spent to secure mineral rights, no fracking operations are active in the state, likely due to the recent drop in oil prices (Wernau, January 24, 2015). Finally, in North Carolina, the state legislature passed a bill in July 2012 to create the Mining and Energy Commission (MEC) to develop fracking regulations, despite a veto by then-Gov. Perdue (Leslie & Binker, May 28, 2014). In May 2014, the state legislature passed legislation to allow permits to be issued despite increasing concerns about the

availability of shale gas in the state and shifting public opinion on the practice (Leslie & Binker, May 28, 2014). The fracking moratorium officially ended in March 2015, though legal issues have held up the approval of fracking permits in the state (Murawski, May 23, 2015). Additionally, while local governments have passed fracking bans in North Carolina, the state government has passed a bill overriding them (Barbash, 2016, April 15).

Given the many facets of the debate, fracking provides an interesting case study for examining the role of media, advocacy, and scientific and technical information in public debate and the policy process. While many cases across the United States would prove interesting, the dichotomy of New York and North Carolina proves especially so. North Carolina has a small amount of shale gas available, yet fast-tracked legislation to allow fracking in the state, while New York, which sits on the natural gas-rich Marcellus Shale, put into place a ban on fracking. Why would a state like New York, which was poised to capitalize easily on the economic boom of fracking, take years to explore the process and ultimately issue the first permanent ban despite its vast reserves in the Marcellus Shale? Conversely, why would a state like North Carolina fast-track legislation in light of increasing public sentiment against it and decreasing optimism in the availability and economic viability of shale gas in the state? To answer these questions, it is important to explore how the *policy images* of fracking developed in each state. I rely here on Baumgartner and Jones' (2010) definition of a *policy image* as "a mixture of empirical information and emotive appeals" that is often manipulated by policy entrepreneurs to define a policy problem in such a way as to advantage their solution (p. 26, 85-86.). This dissertation also touches on the *policy narratives* of fracking as outlined in the Narrative Policy Framework.[1] For

[1] While this dissertation does tangentially discuss policy narratives as laid out in the *Science of Stories*, I do not specifically employ a narrative study. Instead, I focus on the policy image that is developed and incorporate narrative insomuch as elements of the narrative are important to the policy image.

this definition I turn to Jones, McBeth, and Shanahan's (2014) directive that a policy narrative must be "directed at a specific problem," must include "distinct characters" (i.e. individuals, organizations, or even the environment), must "tell a story," and must "offer a policy solution" (pp. 6-7). The development of policy images through policy narratives often takes place by actors within a policy subsystem, or community of experts and stakeholders that coalesce around a specific issue (Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). Most governing is done by a small group of actors within a policy subsystem outside of the public eye; however, when a policy image like fracking catches the public eye, the policy subsystem grows as more actors seek to change the policy image (Baumgartner & Jones, 2010).

For example, the fracking debate involves many actors, both individual and institutional. Journalists covering the issue shape the debate through their media coverage. Stakeholders with a vested interest in the policy outcomes, including environmental advocacy groups and industry organizations, employ strategies to influence policymakers through media relations, grassroots outreach, and direct lobbying efforts. Scientists and researchers studying fracking release reports that provide details that could be used to support or oppose these positions. Regulatory bodies, such as state, county, and municipal departments of environment and/or natural resources, are tasked with sorting through myriad public comments and developing regulations. Policymakers, including state lawmakers as well as county and city officials, develop and advocate for policy positions that support their constituents, ideologies and/or parties. So how did these actors shape the policy image within the fracking policy subsystem in New York and North Carolina?

The Advocacy Coalition Framework (ACF) is particularly useful for studying environmental policy debates. In fact, from 1987 to 2013, environmental policy issues accounted for more than half of all empirical applications of the ACF (Jenkins-Smith et al., 2014). It

provides a framework for understanding how actors within a policy subsystem align according to core beliefs, organizing into coalitions that use various resources and strategies to develop policy narratives that define the policy image according to those core beliefs (Jenkins-Smith et al., 2014). The ACF is especially useful for studying the fracking debates in North Carolina and New York, as the pro- and fracking coalitions in each state were relatively well organized, albeit in different ways. While the ACF is a robust framework, one main limitation is its lack of a full conceptualization of the media (Crow 2010; Shanahan et al., 2011). In addition to a better conceptualization of the media, policy researchers have called for an expanded understanding of science and policy analysis within applications of the ACF, as well as a better understanding of coalition formation, maintenance and resource allocation (Jenkins-Smith et al., 2014; Weible et al., 2011). My dissertation answers these calls as I analyze the different concepts we must account for when studying public debate over environmental policy issues. I outline in this dissertation how in addition to their lobbying efforts, these coalitions and their members leveraged scientific and technical information, media relations, and other strategic communication strategies, to control the policy image for fracking though the policy process.

The remainder of this dissertation proceeds as follows. In this chapter, I provide a general background on fracking research by media and policy scholars, followed by a detailed description of the legislative and regulatory development of fracking in North Carolina and New York, including the evolution of public opinion about fracking and the media coverage of fracking. I then put forth a model that will guide my dissertation as I work toward a better understanding of the role of scientific and technical information, media, and strategic communication in public debate about fracking policy in each state. Finally, I will detail the research questions and methods that guide this dissertation.

My empirical chapters each focus on one main concept in the public debate around environmental policy issues. In Chapter 2, I examine how scientific and technical information was politicized in the debate, as well as the development of fracking as a symbol by bringing together research and theory from public policy, journalism, and the public understanding of science through the lens of the ACF. In Chapter 3, I explore the multifaceted role of the media in public debate by examining how media served as both an actor and a resource for other stakeholders within the fracking policy subsystems of each state. To understand better the role of media in a developing a policy image, I bring together framing research from the political science and media effects research traditions through the lens of the ACF. In Chapter 4, I elaborate the conceptualization of coalitions within the ACF to examine the strength of the pro- and anti-fracking coalitions in each state and the strategic communicative strategies each coalition utilized to educate and mobilize their publics around those core beliefs.

Finally, in Chapter 5, I conclude by arguing that media, strategic communication, and scientific and technical information play myriad roles in the public debate surrounding fracking. Drawing on my empirical evidence, I employ a model for a better understanding of the interrelated roles of the strategic actions of advocacy coalitions, the media, and scientific and technical information as fracking policy was developed in New York and North Carolina.

Fracking: A Scholarly Background

Fracking has become an increased focused of international academic research in the past few years, especially for media and communication scholars (Mazur, 2014; Jaspal & Nerlich, 2014; Cotton, Rattle, & Van Alstine, 2014; Mercado, Alvarez, & Herranz, 2014; Smith & Ferguson, 2013; Bolsen & Druckman, 2015; Shen, Ahern, & Baker, 2014; Williams, Macnaghten, Davies, and Curtis, 2015). Many of these studies have focused on how fracking has

been framed in the media as a controversial debate over its environmental effects and economic benefits (Mazur, 2010; Jaspal & Nerlich, 2014; Cotton et al., 2014; Mercado et al., 2014; Shen at al., Williams, et al. 2015). For example, Mazur (2014) explored the emergence of fracking as a media issue in the United States in an examination of fracking coverage in the *New York Times* from 2010-2012, noting that "once risk issues become controversial, highly publicized and polarized, they may be understood primarily as matters of politics, not of scientific appraisal."

Smith and Ferguson (2014) approached the fracking debate from an issues management perspective, showing that pro- and anti-fracking coalitions in Pennsylvania identified, legitimized, and delegitimized government officials based on their desire to influence the locus of decision making for hydraulic fracturing policy. Through an examination of coalition websites, they found that environmental advocates were more likely to favor federal intervention, while industry advocates were more likely to support state-level decision makers (Smith & Ferguson, 2014). Bolsen and Druckman (2015) used an experimental design to examine the politicization of scientific information in the fracking debate, showing that warnings to dismiss future politicization and corrections to ignore past claims can counteract politicization's effects (Bolsen & Druckman, 2015).

Fracking has also captured scholarly interest on the policy side (Kester, Moyer, & Song, 2015. See also, Arnold & Holahan, 2014; Boudet, Clarke, Bugden, Maibach, Roser-Renouf, & Leiserowitz, 2014; Davis, 2012; Davis & Fisk, 2014; Davis & Hoffer, 2012; Fisk, 2013; Heikkila, Pierce, Gallaher, Kagan, Crow, & Weible, 2014; Kinnaman, 2011; Rabe & Borick, 2013; Rinfret, Cook, & Pautz 2014). According to the research, while there has been debate about the locus of decision-making for fracking policy, it has mostly fallen to the states (Arnold & Holahan, 2014; Davis & Hoffer, 2012). Therefore policy studies have largely focused on the

development of state-level policies (Heikkila et al., 2014; Davis, 2012; Fisk, 2013; Rabe & Borck, 2013). For example, Heikkila et al. (2014) in their study of hydraulic fracturing disclosure policy in Colorado, explored the beliefs and framing strategies of advocacy groups. They found that policy entrepreneurs, timing, negotiated agreements, and policy learning were important components to explain policy change. Other studies have found split public support for fracking (Davis & Fisk, 2014; Boudet et. al., 2014).

The fracking debate has garnered strong interest from both media and policy scholars, yet few studies have explored the implications of both lines of research together, even though fracking policy is frequently mentioned in the media scholarship and media are frequently mentioned in the policy scholarship. This dissertation will add to the fracking literature by bringing together interdisciplinary communication theories within the Advocacy Coalition Framework. Specifically, I will extend the work begun by Heikkila et al. (2014) by exploring the actions of stakeholders in the public debate, particularly with regard to their strategic communication actions. I will also extend the work begun by Bolsen and Druckman (2015) extending the discussion of the politicization of fracking science by exploring how stakeholders can both intentionally and unintentionally politicize the issue. My work will also explore the role of media within public debate about scientific policy issues.

North Carolina

In June 2012, the Republican-led North Carolina legislature passed Senate Bill 820, "The Clean Energy and Economic Security Act," which removed prohibitions for hydraulic fracturing, horizontal drilling and wastewater injection though it placed a moratorium on permits until 2014 (Murawski, 2012, June 4). SB820 also established the North Carolina Mining & Energy Commission (MEC) to develop fracking regulations, prohibiting the state from issuing permits

until the final regulations had been approved (Murawski, 2012, June 4). Governor Beverly Perdue, a Democrat, vetoed SB820 in July 2012, however, the legislature overrode the governor's veto the next day, likely due to a mistakenly cast vote by Democratic Representative Becky Carney (Murawski, 2012, July 2). Media coverage peaked during this time in North Carolina (see Figure 1.2). At the time, however, fracking was a large unknown in the state: 57% of North Carolina voters did not know about fracking, While 21% supported it and 22% opposed it (Elon University Poll, March 2012). The Elon University Poll has tracked public opinion on fracking in the state since it first appeared on the media, public, and policy agendas.

Figure 1.2 Media Coverage and Major Legislative and Regulatory Actions Related to Fracking in North Carolina

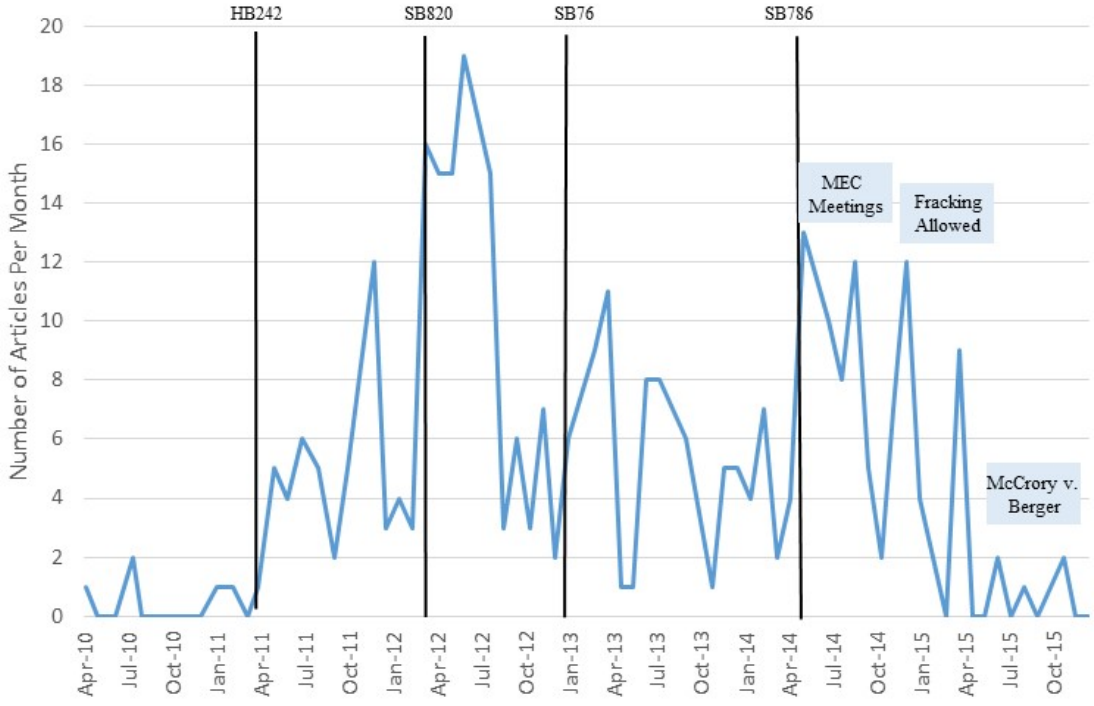


Figure 1.2. The major actions within North Carolina related to fracking came from state legislative actions, and media coverage spiked during these times. Even when the government action was regulatory (such as the MEC meetings), from my observations they were not seen as separate but an extension of the legislative body.

While the MEC was developing the fracking regulations, the state legislature continued to move toward fracking in the state. The state legislature continued to jockey for position, while North

Carolina voters had moved from approximately half not knowing about fracking to 50% supporting it, while 34% were opposed and 16% didn't know (Elon University Poll, September 2013). Meanwhile, actors began to join in the public debate, aligning on the pro- and anti-coalition side. Table 1.1 outlines the major individual and institutional actors in the fracking policy debate in North Carolina.

Table 1.1
Major Stakeholders in North Carolina Public Debate on Fracking

Pro-Fracking	**Self-Described Independent**	**Anti-Fracking**
Advocacy Groups	Media/Journalists	Advocacy Groups
American Petroleum Institute^	Raleigh News & Observer	Clean Water for North Carolina*
America's Natural Gas Alliance^	Jim Murawski	Environment North Carolina*
National Ocean Industries Association^	Editorial Board	Sierra Club North Carolina Chapter
N.C. Chamber of Commerce^	Charlotte Observer	Blue Ridge Environmental Defense League*
Energy in Depth^	Editorial Board	Food and Water Watch*
	Southern Pines Pilot	Save Our Sandhills*
Elected Officials	Ted Natt, Jr.	350.org*
State Senator Bob Rucho (R), sponsor SB720		
State Representative Mike Hager (R)	Science/Academics	Elected Officials
Gov. Pat McCrory (R)	U.S. Geological Survey	Gov. Beverly Perdue (D)
	N.C. Geological Survey	State Representative Becky Carney (D)
Regulatory	Dr. Terry Engelder, Penn State University	
Mining and Energy Commission	Dr. Avner Vengosh, Duke University	
	Dr. Robert Jackson, Duke University/Stanford University	
Companies		
Halliburton	Regulatory	
	Department of Environment and Natural Resources	

Note. ^Denotes formal partnership with North Carolina Energy Coalition, according to their website; *Denotes formal partnership with Frack Free NC, according to their website. Because organizations were often served by several individuals, organizations are used except where an individual was the stakeholder.

In May 2014, the Republican-led state legislature passed SB786, "The Energy Modernization Act" which fast-tracked fracking permits, allowing the state to issue permits

without approval for the final fracking regulation. Despite Democrats' attempts to attach safe guards to the bill, it was passed with very little floor debate, as Republicans continually blocked attempts by Democrats to debate the bill, which one lobbyist and observer of the session called the "worst miscarriage of environmental justice" that she had ever seen (personal observation, May 27, 2014). It was easily signed into law in June 2014 by Gov. McCrory—as opposed to the battle with Democratic Gov. Perdue over The Clean Energy and Economic Security Act, there was no political fighting with the Republican governor. Media coverage of fracking rose again in May 2014 and continued at a relatively high pace. Shortly after, the MEC released its draft fracking regulations, it heard comments from 341 people at four public meetings from August 20-September 12, 2014 and accepted more than 200,000 comments electronically (North Carolina Mining and Energy Commission, 2014). By this time, public sentiment had turned, with 51% of North Carolina voters opposed to and 34% supporting fracking (Elon University Poll, February 2015). Over and over at the public meetings, speakers used their three minutes to rail against a process which they felt would affect them greatly, and which they felt they had been left out of. The final fracking rules were released in December 2014, and fracking was allowed in March 2015. However, a judge halted the approval pending an NC Supreme Court decision that affected the legitimacy of the MEC, and therefore the rules it created (Murawski, personal communication, October 28, 2014). The complicated decision came down in January 2016; however, what it means for fracking permits is still unclear (Jones & Blount, 2016, January 29).

New York

On December 17, 2014, New York became the first state in the United States with significant natural gas shales to issue a statewide ban on fracking (Nearing, December 18, 2015). DEC Commissioner Joe Martens, acting Health Commissioner Howard Zucker, and Governor

Andrew Cuomo announced the ban, which was finalized in June 2015, after seven years of review (Nearing, December 18, 2015). During that time media coverage hit one of its highest peaks (see Figure 1.3) while public opinion showed overwhelming support for the ban, with the approval of 55% of New York voters, compared to 25% disapproval (Quinnipiac University Poll, December 22, 2014). According to the poll, no party, gender, age or regional group disapproved of the poll.

Figure 1.3 Media Coverage and Major Legislative and Regulatory Actions Related to Fracking in New York

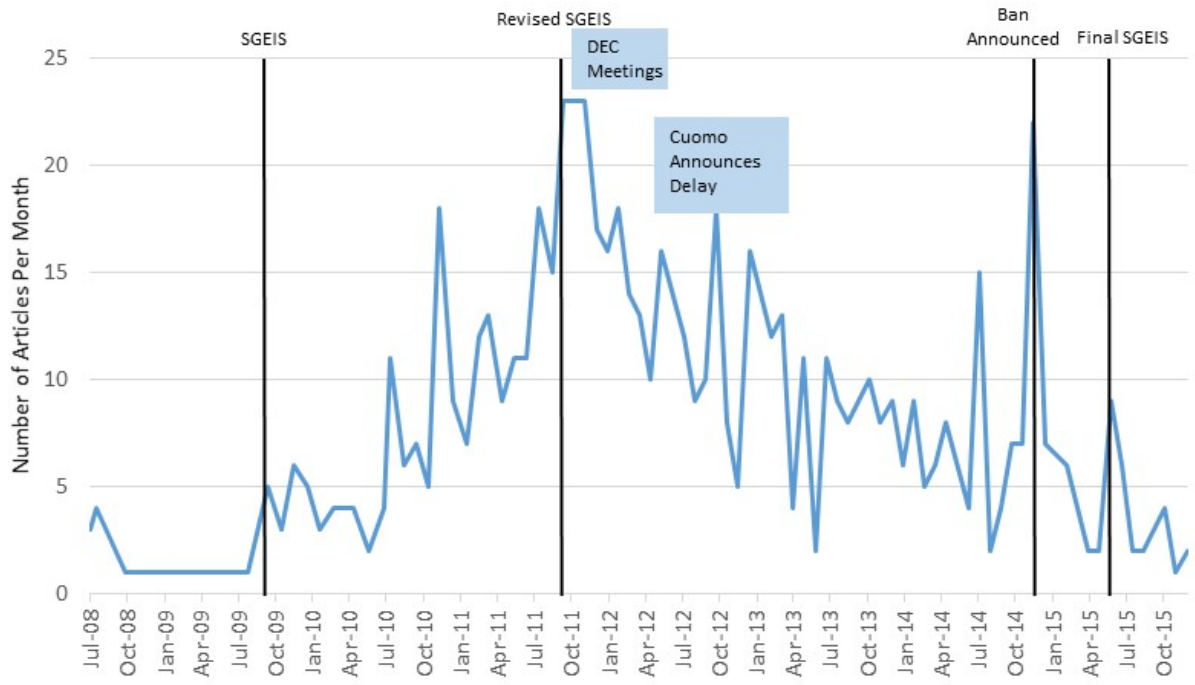


Figure 1.3. As opposed to North Carolina, the policy decisions for fracking remained largely within the regulatory bodies. New York saw less drastic spikes coverage than North Carolina.

The process began around September 2009, when the DEC released its Draft Supplemental Generic Environmental Impact Statement (SGEIS) for fracking, which galvanized fierce opposition (Nearing, 2014, January 5). In September 2011, the DEC released its Revised SGEIS (Nearing, 2014, January 5). The draft study recommended restricting fracking within

New York City's watershed while opening up large parts of the rest of the state to drilling and fracking (New York Department of Environmental Conservation, 2015). Media coverage at the time reached the first of two high peaks (See Figure 1.3). The Quinnipiac University Poll, which has polled about public support for fracking in New York relatively consistently, first asked about fracking in August 2011. At that time, 47% of New York voters supported fracking, while 42% opposed it, with voters focusing on the economic benefits over the environmental concerns across all regions of the state (Quinnipiac University Poll, August 11, 2011). Media coverage of fracking had risen steadily from 2009 to 2011 (See Figure 1.3), with many stakeholders joining the debate. Table 1.2 outlines the major stakeholders in the fracking debate in New York.

Table 1.2
Major Stakeholders in New York Public Debate on Fracking

Pro-Fracking	**Self-Described Independent**	**Anti-Fracking**
Advocacy Groups	Journalists	Advocacy Groups
American Petroleum Institute	*Albany Times Union*	Environment New York*
America's Natural Gas Alliance	Brian Nearing	Capital District Against Fracking*
Independent Oil & Gas Association of New York	*Buffalo News*	Frack Action New York*
Joint Landowners Coalition of New York	Robert McCarthy	Sierra Club, Atlantic Chapter
	Science/Academics	Toxic Targeting
Elected Officials	U.S. Geological Survey	Catskills Mountainkeeper*
Gov. David Paterson (D)	Dr. Terry Engelder, Penn State University	NRDC New York
Gov. Andrew Cuomo (D)	Dr. Avner Vengosh, Duke University	
	Dr. Robert Jackson, Duke University/Stanford University	Journalists
Companies		Fred Lebrun, columnist, *Albany Times Union*
Halliburton		
U.S. Energy	Regulatory	Elected Officials
	Department of Environmental Conservation	Gov. Andrew Cuomo (D)
	Department of Health	

Note. *Denotes formal partnership with New Yorkers Against Fracking, according to their website. Because organizations were often served by several individuals, organizations are used except where an individual was the stakeholder.

Meanwhile, the city of Buffalo New York, banned fracking in February 2011, a largely symbolic vote given that no fracking was planned for the area at that time. Other towns in the Southern Tier, where fracking was likely to take place, quickly followed that ban. In June 2012 the *New York Times* reported that, according to senior officials at the State Department of Environmental Conservation, Gov. Cuomo would likely limit drilling to the deepest areas of the Marcellus Shale rock formation — primarily Broome, Chemung, Chenango, Steuben and Tioga Counties. Instead, later that month, Gov. Cuomo announced a delay in the rulemaking process. In September 2012, DEC asked the NYSDOH to review the SGEIS, effectively restarting the rulemaking process. By March 2013, 46% of New York voters opposed fracking, while 39% opposed it (Quinnipiac University Poll, March 20, 2013). In August 2014, just before the ban was announced, 48% of New York voters opposed fracking, while 43% opposed it (Quinnipiac University Poll, August 2014). In May 2014, 38% of New York voters felt Gov. Cuomo was "dragging his feet, " while only 23% felt he was "carefully evaluating the issue" (Quinnipiac University Poll, May 22, 2014).

The development of the policy image for fracking is complicated. The number of stakeholders, shifting public opinion, and technical and scientific uncertainty led to the politicization of the issue. Many stakeholders very clearly developed into pro- and anti-fracking coalitions, while others remained independent, or, like Gov. Cuomo, were accused of supporting “the enemy” by both sides.

The Advocacy Coalition Framework

A broad definition of public policy includes formal decision, laws, and regulations, as well as the underlying mechanisms that govern the policy process. Policy researchers study “the interactions over time between public policy and its surrounding actors, events, and contexts, as

well as the policy or policies' outcomes" (Weible, 2014, p. 14). The ACF emerged out of a desire to move policy studies beyond policy sciences, a very simple descriptive stages approach to describe the various aspects of policymaking to push theories to test and evaluate causal relationships (Jenkins-Smith et al., 2014). Researchers implementing the ACF seek to empirically explain the dynamic processes of policy learning and policy change by focusing on policy subsystems and their coalitions (Shanahan, Jones, & McBeth, 2011). According to the ACF, advocacy coalitions are "actors sharing policy core beliefs who coordinate their actions in a nontrivial manner to influence a policy subsystem" (Jenkins-Smith et al., 2014, p. 195). These coalitions can vary in their level of resources, formality, and size (Jenkins-Smith et al., 2014).

Coalitions are one major theoretical focus of the ACF, and while not central to this dissertation, an understanding of two other theoretical foci, policy learning and policy change, is necessary to interpret the ACF. Policy learning refers to changes within the belief systems of coalition members within a policy subsystem, while policy change refers to alterations to a policy that deviate from a previous policy (Jenkins-Smith et al., 2014). Learning consists of "communication or exposure to new information, perhaps from an event or negotiation…when policy actors…alter their beliefs [and] come together on new understandings of policy problems and solutions" (Heikkila et al., 2014, p. 70; 79-80). In the absence of policy-oriented learning, negotiated agreements can lead to policy change through "consensus-based decision rules, experienced leaders, adequate funding, face-to-face communication and trust, commitment to the process by all parties, adequate representation of stakeholder interests, and political recognition of the process" (Heikkila et al., p. 60; 78-79). Figure 1.4 outlines the flow diagram of the ACF.

Figure 1.4 Flow Diagram of the Advocacy Coalition Framework.

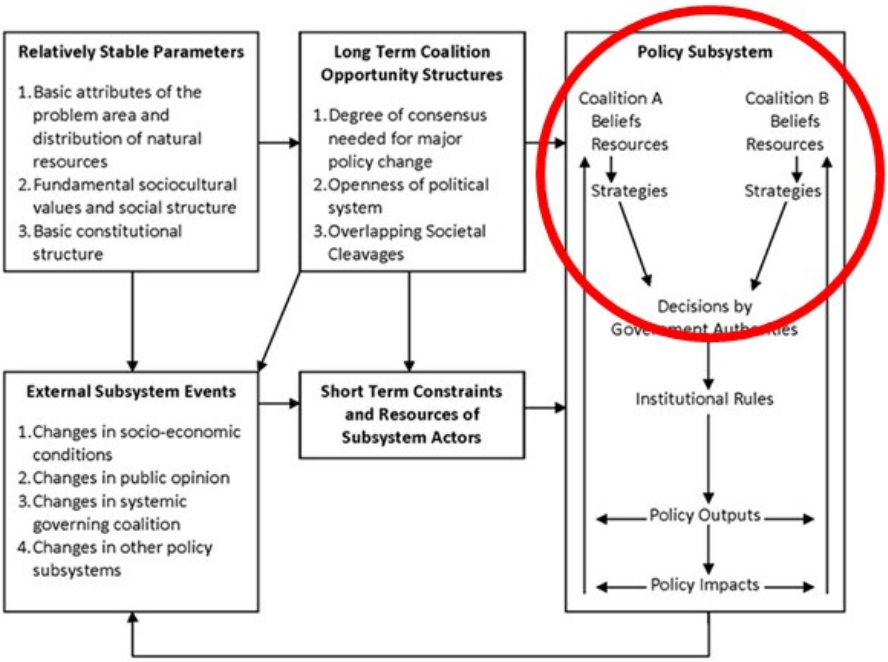


Figure 1.4. My dissertation focuses on the coalitions and their beliefs, resources and strategies. From Jenkins-Smith et al., 2014.

My dissertation focuses on the area circled: the coalitions and their beliefs, resources, and strategies. It also touches on the reactions of the coalitions and other stakeholders to decisions and institutional rules developed, policy outputs and policy impacts.

The ACF was designed as "a subsystem-based theory of political behavior and policy change that purposely avoids a linear depiction of the policy process" to move away from the stages heuristic policy process theory in the 1970s and 1980s (Weible, Sabatier, & McQueen, 2009). However, due to the somewhat linear nature of the development of the fracking public debate as outline above, it is necessary to bring some stages heuristics, such as agenda setting and issues management, into the discussion. When doing so, I adhere to the guidelines outlined by Weible et al. (2009):

First, given that the stages heuristic is a typology and lacks an underlying causal theory:

> we recommend that researchers should adhere to the ACF's assumptions, especially regarding beliefs as a causal driver…Second…researchers wanting to study just one policy should recognize that coalitions will likely be attending to multiple policies simultaneously. Third, coalitions operate across stages, and researchers should recognize that coalitions will, for example, *simultaneously* devote attention to fighting the implementation of a given policy and seek to reformulate the same policy in a legislature. Fourth…researchers are encouraged to investigate the degree of coordination among coalition members who operate across different policy stages. (p. 136)

Taking these guidelines into account, my model assumes coalition beliefs are the causal drivers as strategic actors seek to influence policy image throughout the process. Additionally, I have incorporated other assumptions of the ACF into my study of the fracking policy subsystems in New York and North Carolina. I have already discussed the policy subsystem as my unit of analysis, as well as the coalitions that coalesced around the pro- and anti-fracking movements. Here I outline two more assumptions that are central to my dissertation.

First, one of the main assumptions of the ACF is that the relevant actors within a policy subsystem include "any person regularly attempting to influence subsystem affairs…and may include officials from any level of government, representatives from the private sector, members from nonprofit organizations, members of the news media, academic scientists and researchers, private consultants and even members of the courts" (Jenkins-Smith et al., 2014, p. 190). In addition to the advocacy coalitions discussed above, I explore the role of media and academic scientists. When the ACF was originally created, part of the intention was to better understand the role of science in the policy process (Jenkins-Smith et al., 2014). The ACF assumes that "to better understand policy processes is thus to understand how scientific and technical explanations are integrated into (or deflected from) belief systems, used in political debates and negotiations, and integrated with other forms of knowledge, especially local knowledge" (Jenkins-Smith et al. 2014, p. 192). Belief systems "are not just abstract representations of values and priorities, they also encapsulate the perceived causal patterns and relationships that shape the empirical world"

(Jenkins-Smith et al., 2014, p. 192). Scientific and technical information can point to specific causal relations, problem attributes, and sometimes policy alternatives, especially for environmental issues. However, because it can be tangled up within the belief systems of coalition members, science can often be politicized, especially when the science itself is uncertain and still being developed, as is the case with fracking. This can become especially confusing when the media get involved.

Toward a Model for Understanding Science, Media, and Policy in Public Debate

Scientific and technical information, media, and strategic communication play myriad roles in the public debate surrounding fracking, depending on where the debate is in the policy process. We do not full understand the role of each within the policy process, or how they relate to one another (Jenkins-Smith et al., 2014; Weible et al., 2011; Crow, 2010; Shanahan et al., 2011). This model provides a structure for examining the factors of the public debate that influences public policy for environmental (and other) issues that have strong scientific components. Figure 5.1 outlines my model for better understanding the relationship among these factors that will be explored in this dissertation. While this model employs a stages heuristic to understand the role of scientific and technical information, media, and strategic communication in public debate, it assumes that the core beliefs of coalitions are a causal driver throughout the process, that several strategies (i.e. lobbying efforts) are being pursued simultaneously, and that resource commitments and coordination among actors will be flexible, as outlined by Weible et al. (2009).

Figure 1.5 Model for Understanding Science, Media, and Strategic Communication in Public Debate

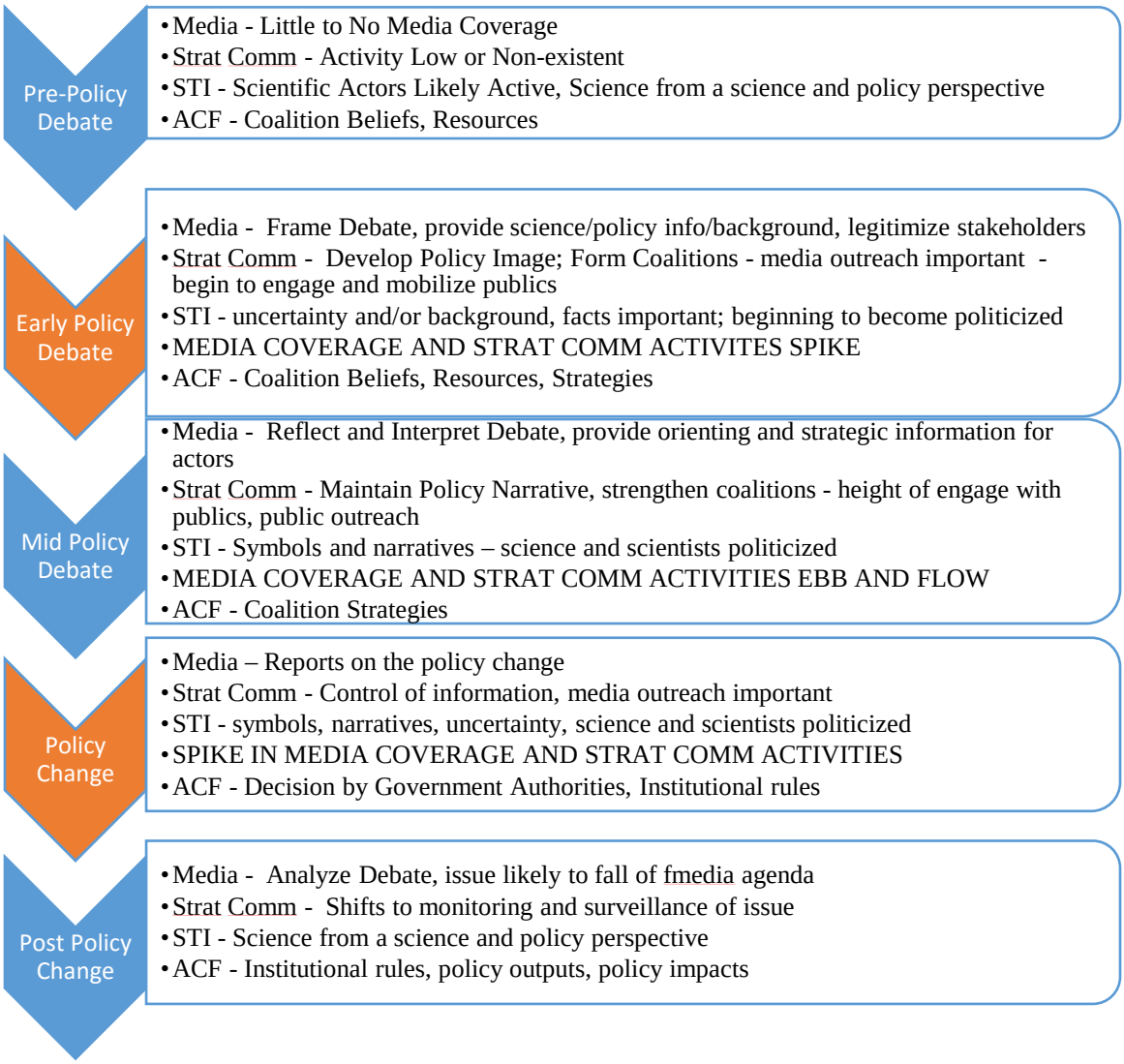


Figure 1.5. This model is designed to fit within the policy subsystem box of the Flow Diagram of the ACF (see Figure 1.4). Media refers to the role of the media, Strat Comm refers to the role of strategic communication, and STI refers to the role of scientific information.

Each empirical chapter in this dissertation focuses on the conceptual development of one main factor in the model. Chapter 2 focuses on the role of scientific and technical information, Chapter 3 focuses on the role of the media, and Chapter 4 focuses on the role of advocacy coalition strategic communication actions. While the phases of a policy debate are discussed in each chapter, they will focus mostly on the early- and mid-policy debate phases, as well as the

actual policy change, when most activities occur. Additionally, while each chapter has a conceptual focus, the interrelated roles of each factor are discussed. Below I outline what will be discussed in each chapter as they relate to the model.

Pre-Policy Debate

This phase aligns with Coalitions, Beliefs and Resources in Figure 1.4. In Chapter 2, I will outline how science often operates outside of public scrutiny at this time. In Chapter 3, I will outline how media coverage and activity is likely low during this time. In Chapter 4, I will outline how strategic communication activity will be low during this time.

Early Policy Debate

This phase aligns with Coalitions, Beliefs, Resources, and Strategies in Figure 1.4. In Chapter 2, I will outline how scientific information can begin to become politicized during this time, and a focus on scientific uncertainty will increase. In Chapter 3, I will outline how media coverage can spike at this time, helping frame the debate, providing scientific background, and legitimizing stakeholders. In Chapter 4, I will outline how strategic communications activities sharply increase, and media outreach and coalition building will be important factors for advocacy organizations.

Mid-Policy Debate

This phase aligns with Coalitions, Beliefs, Resources, and Strategies in Figure 1.4. This refers to the period between when a policy issue first becomes part of the public debate and a policy change occurs. This can take years (three in case of North Carolina, seven in the case of New York). In Chapter 2, I will outline how science and scientists are likely to become politicized during this time. In Chapter 3, I will outline how media coverage will enter into an up-and-down-cycle, reflect and interpret the debate, and provide information on the strategic

actions of stakeholders. In Chapter 4, I will outline how strategic communications activities will be focused on either changing or maintaining the policy image, often by developing policy narratives.

Policy Change

This phase aligns with Decision by Government Authorities and Institutional Rules in Figure 1.4. This refers to the period when policy change is decided or implemented. In Chapter 2, I will outline how science and scientists are likely to be politicized in light of the policy change (particularly by the "losing" coalition). In Chapter 3, I will outline how this period will be marked by another spike in media coverage, as media serve as both actor and resource. In Chapter, 4, I will outline how strategic communications activities will be focused on controlling the policy image after the policy change.

Post-Policy Change

This phase aligns with Institutional Rules, Policy Outputs, and Policy Impacts in Figure 1.4. This refers to the period after the policy change occurs. In Chapter 2, I will outline how science shifts back to operating outside of the public eye. In Chapter 3, I will outline how media will spend some time analyzing the policy process before moving on to other issues. In Chapter 4, I will outline how strategic actors will do the same, shifting their actions to monitoring the policy subsystem until the next period of activity.

To address the roles of each factor, I developed eight research questions to help better conceptualize the role of scientific and technical information, the role of the media, and the role of strategic communication.

Research Questions

I set out to answer two questions related to the use of scientific and technical information. The first looks at how scientific evidence was deployed to develop policy image:

> ***RQ1****: How did the pro- and anti-fracking coalitions in New York and North Carolina deploy scientific evidence to develop their policy image?*

The second looks specifically at the politicization (or not) of fracking and environmental science:

> ***RQ2****: How was scientific evidence politicized during the fracking debates in New York and North Carolina?*

I also set out to answer two questions related to the role of the media in the policy process. The first looks at the media as actors within a policy debate:

> ***RQ3:*** *How did the media within the fracking policy subsystems in New York and North Carolina serve as actors influencing the policy debate?*

The second looks at how other actors may use the media in a policy debate:

> ***RQ4:*** *How did the media within the fracking policy subsystems in New York and North Carolina serve as a resource influencing the policy debate?*

Finally, I set out to answer two questions related to the role of strategic communication in the policy process. The first looks at the coalitions themselves:

> ***RQ5:*** *Who participated in the pro- and anti-fracking coalitions in the public debate around fracking in New York and North Carolina?*
>
> > ***RQ5A:*** *What were the core beliefs of the pro- and anti- coalitions?*

The second looks at strategic communication strategies employed by those actors:

RQ6: *How did the anti- and pro-fracking coalitions within the fracking policy subsystems in New York and North Carolina develop a policy image through strategic communication?*

RQ6A: *How were the pro- and anti- coalition messages reflected in public debate of fracking in New York and North Carolina?*

To best answer these questions, I implemented a multi-method approach, incorporating content analysis, fieldwork, and interviews with actors in the fracking policy subsystems in New York and North Carolina.

Method

The ACF has been interpreted as "an actual 'framework' that supports multiple theoretical areas of emphasis" (Weible, Sabatier, Jenkins-Smith, Nohrstedt, Henry, & DeLeon, 2011, p. 351). To that end, I take an interdisciplinary, multi-method approach to explore how actors shape debate around an environmental policy issue in the public sphere. This dissertation seeks to answer the following questions regarding fracking policy and public debate in New York and North Carolina: How did media influence public debate and public opinion on fracking? Which individual and organization actors were privileged in the public debate? What strategies, devices, and tactics did stakeholders use when communicating about fracking? How did those stakeholders who may be unfamiliar with a debate, particularly policymakers and journalists, educate themselves (or not educate themselves) about fracking? How was scientific evidence used to develop policy images of fracking?

For this dissertation, I am broadly interested in the way that stakeholders develop policy images through public debate around environmental policy issues at the state and local level. I chose the fracking debates in New York and North Carolina because their dichotomy presents an

interesting comparison. North Carolina has a small amount of shale gas available, yet fast-tracked legislation to allow fracking in the state, while New York, which sits on the natural gas-rich Marcellus Shale, put into place a ban on fracking. As indicated by the complexity of the ACF, the development of fracking policy in each state involves many moving parts, including economic drivers like the price of oil. The need to develop policy before consensus on the environmental effects of fracking had been reached within the scientific community, the number of stakeholders involved, and the controversial nature of the public debate only adds to the complexity. To that end, I employed a mixed-method case study approach, using both quantitative and qualitative methods and multiple theoretical lenses, to "provide a robust view of a phenomenon of political communication" (Walsh, 2004, p. 204). Taken broadly, qualitative methods are useful for building theory, in-depth case study analysis, and exploring concepts and relationships we may know little about. Conversely, quantitative methods are useful for empirically testing theory, studying large amounts of data, and looking at causation/making predictions about concepts with which we are familiar. While not common, previous researchers have shown that mixed-methods research can provide rich data and a comprehensive understanding of the public debate and public policy processes. (Heikkila et al., 2014; Williams & Gajevic, 2015).

Media content is central to "understanding processes and effects of communication" (Riffe, Lacy, & Fico, 2014, p. 11). There is a long tradition of using content analysis of newspapers to assess the connection between the media and policy agendas in framing public policy issues (recent applications include Nisbet & Huge, 2006; Davis & Hoffer, 2012). This is especially true for environmental issues:

> Research on media coverage of environmental issues has contributed considerably to our understanding of why some environmental issues are successfully constructed as issues

> for public concern, while others – seemingly equally serious or important – quickly vanish from the media agenda and from public view. [The] ups and downs in environmental issues coverage that content analyses of news media reveal rarely, if ever, reflect just a single influential factor, but likely result from the complex interaction of multiple factors…[which makes content analyses of media coverage] an essential, and potentially highly productive, starting point if we wish to begin, as I started out arguing, to reconnect the study of media content with empirical evidence on either its production/construction or its implications for public understanding/engagement, political and related processes and power in society. (Hansen, 2011, p. 222)

Quantitative content analysis is the "systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules, and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its mean, infer from the communication to its context, both of production and consumption" (Riffe et al., 2014, p. 19). Additionally, media can serve as a public sphere for debate, a representation of public opinion, and a means of information for actors and stakeholders (Herbst, 1998; Jacobs & Townsley, 2011).

I chose a qualitative empirical method because qualitative research complements and enriches quantitative research to "develop insights about underlying forms and dynamics of the phenomenon under study…qualitative researchers attach meaning, rather than measurement, to the phenomena observed" (Silbey, 2014, p. 287). However, there are very few qualitative, or even mixed-method, studies that examine how stakeholders develop public debate about environmental policy issues within a policy process framework (e.g., Heikkila et al., 2014; Williams & Gajevic, 2015). Quantitative research methods have been privileged for policy studies, political science, and political communication scholars (Karpf, Kreiss, & Nielsen, 2013; Heikkila et al. 2014; Hansen, 2011). Yet as Karpf, Kreiss and Nielsen (2013) argue, qualitative research can provide the "inductive examination of how social phenomena actually work" to help move forward theory building across these disciplines (p. 24).

Fieldwork and interviews.

I conducted 33 interviews and fieldwork from May 2014 through March 2016. Interviews included three journalists, four elected officials, fifteen county regulatory officials, and nine volunteers and staff members of advocacy groups. The initial actors contacted to be interviewed were selected from those who appeared in the sample of articles from the content analysis after IRB approval. The journalists who covered the issue and the sources they quoted were contacted via phone and email. I supplemented this initial list by leveraging relationship formed during my research as well as an implemented snowball sampling technique. As is common for this type of research, respondents were named, especially when their comments are public record, such as media statements or legislative testimony. However, I offered them the opportunity to use pseudonyms or speak on background for particularly sensitive information or as requested. The consent form, reviewed with all respondents, included the right to stop at any time, the right to retract content, and the right to revoke consent for a limited time after completing the interview.

While the executive directors, state legislators, and other senior leadership are the public faces for many organizations, it is a reality of strategic communication and policy development that much of the work is often done by a team outside of the public eye (see Baumgartner & Jones, 2010). To that end, my interviews focus on the employees and volunteers involved in that work. Additionally, for two groups I relied largely on public statements – state-level elected officials and industry representatives. First, access to these groups was sufficiently limited that I could not obtain a saturation point to make any theoretical claims. Second, as I started the interview process, I realized that some of the most interesting interactions between media and science from a policy perspective were occurring at the county and city level. The major interviews that informed this dissertation included journalists John Murawski of the *Raleigh*

News & Observer and Fred Lebrun and Chris Churchill of the *Albany Times Union*; environmental advocates Hope Taylor of Clean Water for North Carolina; Harvey Richmond, Chelsea Barnes, and Nick Brown of the Sierra Club, North Carolina, Capital Group; Susan Zimet of Frack Action New York, Theresa Vick of Environment North Carolina; Robert M. Ciesielski and Roger Downs of the Sierra Club Atlantic Chapter; Dennis Harkawik, an environmental lawyer, Joseph Golombrek, Jr., a member of the Buffalo (NY) Common Council; and Darryl Moss, mayor of Creedmoor, NC. I also interviewed several researchers and county environmental and health officials in both states who requested pseudonyms.

Many of the activities in New York had ended by the time I began my research, so I depended on recollections of respondents as well as public records, including media reports, triangulating accounts of all events. However, because of my location in North Carolina, as well as the timing of my research, I was able to attend and observe many public events, legislative sessions, and public meetings. Additionally, I spent six months volunteering with the Capital Group of the Sierra Club North Carolina Chapter. The major events that informed this dissertation are as follows: the North Carolina General Assembly legislative session that passed SB720 (and the media event held prior by Frack Free NC coalition); the MEC meetings to obtain public comments on fracking (as well as attendant media events); the Moral March on Raleigh & HKonJ People's Assembly, Sierra Club, North Carolina Chapter planning meetings and planning calls. See Appendix I for a full list of interviews and fieldwork sites. These were semi-structured interviews, based on my knowledge of the fracking debate from media coverage and my own previous research. My line of questioning differed depending on the role of the interviewee. See Appendix II for my interview guides for advocacy organizations, government officials, media, and scientists.

I depended on recollections of respondents as well as public records, including media reports, and I triangulated accounts of all events in both states. I employed thematic analysis to analyze the transcribed interviews and field notes from my participant observation. I employed general qualitative coding analysis by identifying topic areas to sort and synthesize the data into the major themes I discovered (Charmaz, 2014).

Content analysis.

This content analysis focused on newspaper coverage of fracking in North Carolina and New York from January 1, 2008, to December 31, 2015. This encapsulates the full extent of media coverage for the fracking policy process in each state, capturing when fracking first appeared on the media agendas in each state and ending after major legislative decisions in each state that, while not ending debate, at least moved debate about fracking to the next phase. Because this study includes a focus on state-level fracking policy, the analysis includes the *Raleigh (NC) News & Observer* and the *Albany (NY) Times Union*, which serve the state capitols. Additionally, because this study focused on media as they relate to public opinion and public understanding, the analysis includes the *Charlotte (NC) Observer* and the *Buffalo (NY) News*, which are the largest circulation newspapers focused on news coverage within each state. *The Buffalo News* was the largest circulating newspaper after the *New York Times*, which was omitted due to its larger national/international focus. Finally, the analysis included the *Southern Pines (NC) Pilot* and the *Canandaigua (NY) Daily Messenger* to incorporate newspapers serving small towns in areas where fracking would be most likely to affect the communities directly that may have different concerns than the larger cities.

I conducted a search in America's News Newsbank database using the keywords "fracking" OR hydraulic fracturing" OR "hydrofracking" in ALL TEXT to ensure all articles

that discussed fracking were captured. Articles were included if they mentioned "fracking" OR hydraulic fracturing" OR "hydrofracking" more than twice to ensure they included significant statements about fracking. I included editorials and op-eds (which made up approximately one-quarter of the final sample, but I omitted letters to the editor, in accordance with past research. This yielded a final sample of 411 articles for North Carolina and 837 articles for New York for a total of 1248 articles. I coded each article, and reliability was assessed with an independent coder on a 10% randomly selected sample of the articles. See Appendix III for the full coding protocol.

First, articles were coded for the *focus* of the article. This was determined by the presence of fracking in the headline or lead, or the assessment that the majority of the article was about fracking. While the majority of articles were focused on fracking or natural gas, other foci included energy, environmental policy, legislative session overviews, and year-in-review/look ahead articles. This step was necessary because articles focused on fracking did not always have the key terms in the headline and lead, particularly during the early phase of the debate.

Next, articles were coded for the way fracking was *framed*. This study employed a stable of frames adapted from Nisbet (2010) for studying scientific controversies. Each article was coded for one of the following main frames:

- Environmental effects - focused on environmental impacts and risks, such as air and water quality.
- Public health effects – focused on issues related to public health, such as gag orders without mentions of the environment.
- Economic development – focused on jobs created by fracking and fracking as an energy source.

- Conflict/strategy – focused on who is "winning" or "losing" the debate, or fracking as a tradeoff between environmental protection and economic development.
- Balance for the community – focused on the effects of fracking on the community, including a focus on a balance of environmental and economic considerations for the good of the community.
- Government administration – focused on how bills or regulations were being developed or administered without a focus on strategy of the actors.
- Technical/policy background – focused on the history of fracking in the state or the technical background of fracking without focusing on its uncertainties.
- Technical/policy uncertainty – focused on the unknowns of fracking, including the struggles among government leaders with how to regulate it and the availability of fracking in the state.

Next, because I was interested in the actors who participated in public debate around fracking within each policy subsystem, I identified the quoted sources in each article.

A *source* was defined as a specific, named person quoted in an article. Quotes could be direct or indirect, but had to be about fracking. Source categories used for this study were based on my own knowledge of the fracking issue. Each source was coded for the following source categories:

- Government – Elected Official – this includes the elected official, as well as statements or lawsuits on behalf of the individual from a spokesperson or lawyer.
- Candidate – this would be a candidate in an election or a spokesperson for that candidate, including elected officials speaking as part of a campaign versus as part of governing.

- Government – Agency - this includes statements of a lawyer on behalf of the organization.
- Environmental Advocate – this was someone working for an environmental organization or issue. Someone attending a protest would be considered an advocate. This includes statements of a lawyer on behalf of an organization or individual who falls within this category.
- Industry Representative or Industry Advocate – this was an official representative of a fracking company or industry group. This includes statements of a lawyer on behalf of an organization or individual who falls within this category.
- Social/Community Advocate - this was someone working for an organization or issue about protecting the community regarding issues other than the environment. Someone attending a protest would be considered an advocate. This includes statements of a lawyer on behalf of an organization or individual who falls within this category.
- Citizen – this was a local citizen asked to speak about the issue, but not attending a protest specifically advocating for one side of the issue. They could be attending another kind of event though (i.e. a debate or a public meeting).
- Scientist/Academic – this includes any scientist or academic providing independent research or comment. This also includes scientists for the USGS and scientists working for institutes at universities that avow their independence.
- Media – usually columns written by journalists or editorials.
- Landowner – usually citizens that own land in an area that would be affected by fracking.

Next, the assertions made by each source were coded. *Source Assertions* were coded as at least one sentence related to fracking quoted from each *source* and were coded as present or absent for reach source. Source assertions were based on my knowledge of the fracking debate. Each source was coded for the presence or absence of the following source assertions:

- Need to protect the environment– such as water contamination or air pollution from fracking operations.
- Need to protect public health **–** if human/public health effects are mentioned.
- Need to contribute to the economy – such as focusing on the economic benefits of fracking for the community and/or the state.
- Need for energy independence – points to fracking as a means to energy independence, fracking as a "bridge" in U.S. energy policy, fracking as a better energy alternative
- Quality of life issues – such as highlighting the stress of fracking operations on communities, or effects or benefits of fracking that go beyond environmental effects or economic benefits.
- Questioning the science of fracking – such as questioning the amount of natural gas recovered by fracking, or whether the costs outweigh the benefits, or noting deficiencies in studies showing fracking is safe.
- Questioning the science of environmental effects – such as noting deficiencies in studies showing fracking degrades environment, benefits outweigh costs.
- Administration of fracking rules and regulations – looking at the rules of fracking, including the ability of the state to regulate fracking.
- Fracking is safe - general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking.

- Fracking is unsafe – general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking.
- Fracking as a moral issue – such as calling fracking unethical or immoral, questioning the morality or ethics of energy companies, government, or environmentalists.
- Need for precaution – such as invoking the need to proceed carefully or do more study in light of uncertainties related to fracking and/or environmental research.
- A call for working together – calling on "both sides" (i.e. Democrats and Republicans, Government and Industry, Environmentalists and Industry and/or government) to work together for the good of the community and/or state.
- Distrust of the other side – questioning the actions or motivations of their opponents; also questioning if the other side knows what they are doing; also mentions of not knowing what's in in fracking fluid .

Protocol and coding reliability between two trained coders for each variable was assessed independently using a randomly selected 10% of the articles using Krippendorf's Alpha. Reliability for article *focus* was .933 and *frame* was .926. Reliability for *source category* was .893 and *source tone* was .981. Reliability for the *source assertions* ranged from .817 to 1: Need to protect the environment (.97); Need to protect public health (.975); Need to contribute to the economy (.982); Need for energy independence (.861); Quality of life issues (.981); Questioning the science of fracking (.856); Questioning the science of environmental effects (.817); Administration of fracking rules and regulations (.992); Fracking is Safe (.874); Fracking is Unsafe (.813); Fracking as a moral issue (.919); Need for precaution (.907); A call for working together (1); Distrust of the other side (.935).

Content analysis results.

This content analysis yielded 1,248 articles, 411 for North Carolina and 837 for New York. I am presenting the aggregate results and frequencies here to provide context for the dissertation, and the data will be analyzed in more detail as they relate to the empirical chapters below. Table 1.3 provides the frequencies of the focus and frame of fracking for each state.

Table 1.3
Frequencies of Focus and Frame for each State (%)

	North Carolina (N=411)	**New York (N=837)**	**Total (1248)**
Focus			
Fracking/Natural Gas	81.0	79.7	80.1
Energy	3.6	12.1	9.3
Environmental Policy	3.2	2.9	3.0
Elections	3.6	2.6	3.0
Legislative Session	5.4	1.3	2.6
Year-in-Review	1.2	.8	1.0
Other	2.0	.6	1.0
Total	100	100	100
	North Carolina (N=411)	**New York (N=837)**	**Total (1248)**
Frame			
Environment	16.2	18.9	18.9
Public Health	.5	2.2	2.2
Economy	20.9	13.5	13.5
Conflict/Strategy	31.0	30.6	30.6
Balance	6.1	5.7	5.7
Administration	18.4	15.8	15.8
Background	1.5	1.1	1.1
Uncertainty	5.4	5.9	5.9
Other	0.0	6.3	6.3
Total	100	100	100

This content analysis yielded 3,821 sources (961 for North Carolina and 2860 for New York), for an average of 3.1 sources per article (2.3 for North Carolina and 3.4 for New York). These sources made 9294 assertions about fracking, for an average of 2.4 assertions about fracking per source. Table 1.4 provides the frequencies of the source categories, source tone, and source assertions for each state.

Table 1.4
Frequencies of Assertions Made by Sources in Each State (%)

	North Carolina (N=961)	New York (N=2860)	Total (3821)
Source Categories			
Government – Elected Official	19.7	16.2	17.7
Candidate	2.8	3.5	2.6
Government - Agency	21.6	16.9	18.1
Environmental Advocate	12.1	19.2	17.4
Industry Representative/Industry Advocate	11.4	16.9	15.5
Social/Community Advocate	4.6	1.5	2.3
Citizen	3.2	7.7	6.6
Scientist/Academic	10.1	4.2	5.7
Media	7.7	8.8	8.6
Landowner	5.6	2.3	3.1
Other	1.1	2.7	2.3
Total	100	100	100
Source Tone	**North Carolina (N=961)**	**New York (N=2860)**	**Total (3821)**
Pro-fracking	26.8	20.5	22.1
Anti-fracking	35.5	38.0	37.4
Neutral	37.7	41.5	40.5
Total	100	100	100
Source Assertions	**North Carolina (N=961)**	**New York (N=2860)**	**Total (3821)**
Need to protect the environment	23.5	45.8	40.2
Need to protect public health	5.6	13.5	11.3
Need to contribute to the economy	43.6	25.4	29.7
Need for energy independence	15.8	8.8	10.6
Quality of life issues	9.1	11.2	10.3
Questioning the science of fracking	15.3	11.5	12.5
Questioning the science of environmental effects	1.0	6.2	4.9
Administration of fracking rules and regulations	65.6	45.0	50.2
Fracking is safe	7.8	6.9	7.1
Fracking is unsafe	5.6	5.8	5.7
Fracking as a moral issue	7.8	3.5	4.6
Need for precaution	34.1	25.0	23.6
A call for working together	5.4	4.2	4.5
Distrust of the other side	27.5	22.3	23.6

Note. Because the source assertions were coded as present or absent for each source and more than one assertion was allowed per source, source assertion percentages will not equal 100%. Percentages are based on the number of sources that made the assertion.

Conclusion

The fracking debate is an extremely controversial debate that has seen the politicization of science in the face of scientific uncertainty and an increase in interested stakeholders. The media helped frame the issue as a choice between environmental effects and economic development. In bringing interdisciplinary research from media effects, political communication, sociology, and public relations to this framework, I will analyze the different factors we must account for when studying public debate over environmental policy issues, such the actions of stakeholders, the role of the media, and the strategic use of scientific and technical information in developing a policy image.

Chapter 2 – The Elusive Role of Facts: Science, Policy, Politics and Public Debate

In June 2015, the U.S. Environmental Protection Agency (EPA) released its most comprehensive report to date on the effects of hydraulic fracturing on drinking water. It raised concerns about isolated incidents of water pollution but found no systematic evidence of damage (Warrick, 2015, June 4). While the report garnered national media attention, it appeared "unlikely to cool the national debate over the drilling practice that has spurred huge increases in U.S. oil and gas production in the past five years [as] opponents and supporters of fracking instantly seized on portions of the report that supported their view" (Warrick, 2015, June 4). This *Washington Post* article reveals this with three consecutive quotes from the EPA, the American Petroleum Institute (API), and the Sierra Club:

> Burke [EPA's science adviser] called the draft report "the most complete compilation of scientific data to date," encompassing 950 sources of information, such as scientific papers and technical reports, as well as original, peer-reviewed research conducted by the agency itself. "It greatly increases our understanding of potential impacts," he said…
>
> …The American Petroleum Institute called the study a validation of the energy industry's contention that fracking poses little risk to drinking water. "After more than five years and millions of dollars, the evidence gathered by EPA confirms what the agency has already acknowledged and what the oil and gas industry has known," said Erik Milito, the institute's Upstream Group director. "Hydraulic fracturing is being done safely under the strong environmental stewardship of state regulators and industry best practices."
>
> Michael Brune, the Sierra Club's executive director, said the report "confirms what millions of Americans already know: that dirty oil and gas fracking contaminates drinking water." Brune criticized the report for failing to adequately consider the full range of impacts to local communities. "The EPA must conduct a comprehensive study that results in action to protect public health," he said. (Warrick, 2015, June 4).

How could these actors within a policy debate draw such different conclusions about scientific evidence? What is the role of science in policy debates, and what should it be? What does this mean for both policymaking and for the public's understanding of policy issues with strong scientific and technical aspects, such as fracking?

To understand better the role of science in a developing policy debate, this chapter brings together research from policy, journalism, and the public understanding of science through the lens of the Advocacy Coalition Framework (ACF). Using the ACF, I examine the fracking debate and policy development in North Carolina and New York.[2] North Carolina has a small amount of shale gas available, yet fast-tracked legislation to develop fracking regulations in the state, despite increasingly conflicted public opinion on the subject. New York, which sits on the natural gas-rich Marcellus Shale, put into place a moratorium on fracking. I will explore the policy images that developed in these two states and the role of scientific and technical information in their development.

My model explores the use of scientific and technical information within the public policy framework, looking especially at how media and strategic actors can politicize science during the early- and mid-phases of a policy debate. Through the lens of the ACF, I will explore how both the pro- and anti-fracking coalitions used science to develop their policy images of fracking, especially as it rose to the top of the media, public, and policy agendas.

[2] To date, most fracking legislation has occurred at the state and local levels.

Literature Review

Scientific and technical information within the Advocacy Policy Framework.

A broad definition of public policy includes formal decision, laws, and regulations, as well as the underlying mechanisms that govern the policy process. Policy researchers study "the interactions over time between public policy and its surrounding actors, events, and contexts, as well as the policy or policies' outcomes" (Weible, 2014, p. 14). The ACF is particularly useful for studying environmental policy debates. In fact, from 1987 to 2013, environmental policy issues account for more than half of all empirical applications of the ACF (Jenkins-Smith et al., 2014).

Researchers implementing the ACF seek to explain empirically the dynamic process of policy change by focusing on policy subsystems and their coalitions (Shanahan et al., 2011). Policy subsystems are the community of actors that coalesce around a particular issue that often operate outside of the public eye, especially for policy issues with strong scientific and technical components (Baumgartner & Jones, 2010). According to the ACF, actors within these coalitions who share core beliefs about a particular issue and coordinate their actions around that issue can be grouped into coalitions (Jenkins-Smith et al., 2014). While coalitions in the ACF can vary in their level of resources, formality, and size, the coalitions in the fracking debate (anti-fracking or pro-fracking) in New York and North Carolina were relatively well-formed and official, especially on the anti-fracking side. Coalitions have been one major theoretical focus of the ACF, with policy learning, which refers to the shifting of beliefs among coalition members, and policy change, which refers to alterations to a policy that deviate from a previous policy, comprising two more major theoretical foci (Jenkins-Smith et al., 2014).

When the ACF was originally created, part of the intention was to better understand the role of science in the policy process (Jenkins-Smith et al., 2014). The ACF assumes that "to better understand policy processes is thus to understand how scientific and technical explanations are integrated into (or deflected from) belief systems, used in political debates and negotiations, and integrated with other forms of knowledge, especially local knowledge" (Jenkins-Smith et al., 2014, p. 192). Belief systems "are not just abstract representations of values and priorities, they also encapsulate the perceived causal patterns and relationships that shape the empirical world" (Jenkins-Smith et al., 2014, p. 192). Scientific and technical information can point to specific causal relations, problem attributes, and sometimes policy alternatives, especially for environmental issues. However, because it can be tangled up within the belief systems of coalition members, science can often be politicized, especially when the science itself is uncertain and still being developed, as is the case with fracking.

Several studies have used the ACF to examine the role of science in environmental policy debates (Montpetit, 2011; Weible, 2008; Silva & Jenkins-Smith, 2007). In an examination of biotechnology policy subsystems, Montpetit (2011) found in an examination of the role of scientists in watershed policy development that the more adversarial a policy subsystem was, the less credibility given to scientific expertise, while Weible (2008) found scientists were more likely to be seen as allies or opponents by coalition members in adversarial systems. Silva and Jenkins-Smith (2007) used climate policy and low-dose radiation protection policy to explain how scientists interpret less-than-certain scientific findings to inform policymakers' choices on controversial science policy issues. They found that scientific certainty can "increase understood risks as readily as it can decrease them" (Silva & Jenkins-Smith, 2007, p. 655). These studies

indicate that something else, besides the scientific and technical information itself, determines how effective science is in public debate.

Understanding the role of science in environmental policy debates requires looking at science as a resource for policy makers and scientists as policy advisers (Pielke, 2006), as well as looking to scientists to help the public understanding of science as public communicators (Friedman et al., 1986; Willems, 1995; Weingart, 2005; Peters, 2008). These dual roles are interdependent within a public policy debate, as "public communication of scientific expertise often has political impacts and – in response – politics, organisations and groups with political goals try to govern the production and use of scientific expertise" (Peters, 2008, p. 132). To understand better the role of science in public debate over environmental policy issues, we must understand the relationship between the scientific process, the policy process, and the journalistic process.

Science and environmental policy.

Past research has shown that when policy debates involve science, such as fracking and other environmental issues, then the science can be politicized, particularly where there is no scientific consensus and either side can make scientific claims (Nelkin, 2005; Oreskes, 2004; Sarewitz, 2004; Pielke, 2004; Jasanoff et al., 1998). We are talking here about three separate concepts: science, policy, and politics, though the three often can be conflated with each other (Pielke, 2006). Because of this, throughout this paper I will rely on Roger Pielke's distinction of science from a policy or political perspective, and I will use each word accordingly:

> Addressing the significance of science for decision making requires an ability to clearly distinguish policy from politics. For science, a *policy perspective* implies increasing or elucidating the range of alternatives available to decision makers by clearly associating the existing state of scientific knowledge with a range of choices. The goal is to enhance freedom of choice. By contrast, a *political perspective* seeks to decrease the range of alternatives (often to a single preferred

> option) available to policy makers, i.e., to limit the scope of choice, for example, support of, or opposition to, the Kyoto Protocol. Because scientific results always have some degree of uncertainty and a range of means is typically available to achieve particular objectives, the task of political advocacy necessarily involves considerations that go well beyond science. (Pielke, 2004, p. 409)

I would also distinguish these two perspectives from the *science perspective*, whereby scientists (in both the "hard" and social sciences alike) debate each other over conceptual, methodological, and epistemological differences—the crux of scientific inquiry (See Kuhn, 1962, and Latour, 1987).

When a public policy issue that involves unresolved science, such as fracking, becomes a public issue, actors on either side of the issue can begin to attack and question any scientific research that seems to "support" the other side (Herrick & Jamieson, 2001; Oreskes, 2004; Sarewitz, 2004). As Naomi Oreskes, a preeminent historian of science points out:

> We all want our views to be based on truth, and many of us look to science to provide truth. But the truth is not always convenient, and it is rarely convenient for everyone, generating incentive for manipulation and misrepresentations of information. This is particularly true in the domain of environmental policy…Scientific consensus is a complex process—involving a matrix of social, political, economic, historical considerations along with the epistemic—and history shows that its achievement typically requires a long time: years, decades, even centuries. But even when a stable consensus is achieved, scientific uncertainty is not eliminated… A determined individual may choose to pursue these uncertainties, and that determination may successfully destabilize the prior consensus. In a "purely" scientific debate, that determination would, ideally, arise solely from the demands of empirical evidence, but no debate is ever "purely" scientific, given that, at minimum, credibility, reputation, and, perhaps future funding are at stake. When there is a policy dimension to a scientific debate, we can expect such determination to be common, as scientists pursue issues whose importance is measured against a backdrop of political significance, as the media focus attention on 'mavericks,' and as money flows into scientific research from parties with stakes in the outcomes. (Oreskes, 2004, p. 369, 380)

Scholars studying the role of science in environmental policy are especially concerned when the policy debate, the political debate, and the scientific debate become conflated (See i.e. Pielke, Jr. 2004, and Sarewitz, 2004). Each arena has a particular set of logics, and these logics often can be

at odds (Pielke, Jr., 2004). This permits science to be mobilized as one of many strategic actions to influence a public policy debate.

Political debate "permits the mobilization of a broad range of weaponry, including scientific facts, religious dogma, cultural norms, and personal experience, in defense of one's values and interests" (Sarewitz, 2004, p. 398). According to noted political scientist Roger Pielke:

> From the perspective of the public or policy makers, scientific debate and political debate on many environmental issues already have become indistinguishable, and such cases of conflation limit the role of science in the development of creative and feasible policy options. In many instances science, particularly environmental science, has become little more than a mechanism of marketing competing political agendas, and scientists have become leading members of the advertising campaigns. (2004, pp. 405-406)

This leads to science becoming a political football that is tossed around and manipulated to meet the needs of the political agenda.

While not a new idea, the politicization of science came to the forefront of mainstream media with the release of Bjørn Lomborg's *The Skeptical Environmentalist* in 2001. In the book, Lomborg made the claim that environmental problems were not as bad as environmental groups had advocated, using statistics to back up his claims. The book garnered support and attention from many in mainstream media, while environmental groups waged a campaign against Lomborg, claiming that he had "gotten his 'science' wrong" (Pielke, 2004). This politicization of science is concerning because at most it overrates the idea of scientific "proof" and at worse makes it more difficult to separate "facts" and "values" (Pielke, 2004, p 407. Also Oreskes, 2004, and Sarewitz, 2004). These debates over the "right" science have occurred of such issues as acid rain, climate change, tobacco, and cancer (Oreskes & Conway, 2010; Glanz, Bero, & Slade, 1998; Proctor, 1996)

Science and media coverage of environmental policy issues.

There is a long history of policy research that connects media frames to policy frames (See Baumgartner & Jones, 2010. Also Andsagar, 2000; Ashford, 2005; Delshad & Raymond, 2013; Kensicki, 2004; Kiousis et al., 2013; Michelson, 2013; Wolfe, 2012). The public often turns to media for information on issues with which they have little experience or knowledge, such as environmental and scientific issues (Friedman, 2015; Riffe & Reimold, 2008; Riffe, Lacy, & Reimold, 2007). While the public can obtain this information from many different sources, such as movies and documentaries, television shows, and Internet blogs and non-news websites, news organizations still represent a major source of this information (Friedman, 2015).

Much the same as the political process, the scientific process is also in conflict with journalistic processes and news values such as timeliness, human interest, and conflict that can lead to coverage of news that is event oriented, focused on personality or controversy (Dudo, 2015; Friedman, 2015). This is most evident in the cyclical nature of news coverage of environmental issues, which has been identified for issues such as climate change, biotechnology, and nuclear energy (Brossard et al., 2004; Boykoff, 2008; Nisbet & Huge, 2006; Baumgartner & Jones, 2010). Often, the only time environmental issues make it into the news is when there are significant stakeholder arguments, especially among elected officials (Nisbet & Huge, 2006). Environmental crises, such as weather events, wildfires, and oil spills also can lead to a spike in media coverage. The problem with this cyclical and episodic nature of media coverage of environmental events is that the coverage can be superficial, without any substantive discussion about solutions to the problems (Cox, 2012; Hansen, 2011). This can lead to the tendency of media to cover negative news, such as environmental crises or fighting among environmental stakeholders, which is a concern for scholars interested in public understanding of

these issues (Dudo, 2015). Roger Pielke highlights how science, media, and politics can unintentionally lead to confusion:

> The constant drip-drip-drip of studies and reports – frequently embargoed by leading journals and agencies to enhance the appearance of newsworthiness – is routinely followed by advocates of this or that perspective scrambling to issue press releases highlighting how the new finding vindicates their perspective and demolishes that of their opponents. Consequently, the general public may be confused when reading this week that coffee causes cancer, because last week the media reported that coffee prevents cancer. But this is how science, or intelligence gathering more generally, actually works. The most recent study adds only a bit of information to a vast sea of previous research and knowledge, and consequently is rarely definitive. Smoking guns are rare. Often the most accurate appraisal of information is "we simply don't know for sure." But decisions -- Drink coffee? Invade Iraq? Regulate emissions? -- have to be made anyway. (Pielke, 2004, May)

When environmental sciences become part of a policy debate, "we simply don't know for sure" is not helpful in developing a policy.[3] When actors on either side of a debate exploit this uncertainty—often through media—it not only politicizes the issue but also can be detrimental to public understanding.

The complexities of a policy issue like fracking become all the more concerning when we consider the increasing pressure on resources that make journalists increasingly dependent on governmental sources and/or public relations professionals. (Friedman, 2015). As reporters at media organizations are increasingly trying to create media content with less time and fewer resources, they are modifying their routine practices. For instance, they are much more dependent on sources, government or otherwise (Friedman, 2015; Williams, 2015; Dunwoody, 2015; Cox, 2012). They are also increasingly obtaining their environmental information from outside blogs, such as Andrew Revkin's Dot Earth, or news services, such as the Environmental

[3] I encountered this in my work as public affairs manager for the American Water Works Association. Whether dealing with a media inquiry of developing legislative testimony, it was very difficult to obtain the statements of certainty (desired by the journalist or the policymakers) from the engineers and scientists I worked alongside. While frustrating for me at the time, I now understand where they were coming from.

News Service. This could lead to a concentration of power for the dissemination of environmental information in the hands of a few organizations or the sources (such as industry, government, and advocacy groups) themselves. Revkin (2014), who was employed as an environmental reporter at the *New York Times* before starting his Dot Earth blog, has suggested that blogs may be better suited than traditional media organizations for covering environmental issues. This, however, could see an increase in pressure on scientists to communicate directly with the public—a skill that many of them have not been trained for (Dudo, 2015).

However, media can also aid in public understanding of environmental policy issues. First, by providing frames for understanding for these issues, the media can actually make these issues more accessible and more salient for the public. Research has shown that narratives and frames often make it easier for people to process information (Scheufele, 2000; Iyengar, 1990; Shen at al., 2014). In an experiment, Shen at al. (2014) showed that narrative news articles that emphasized the potential economic benefits or environmental consequences associated with shale gas drilling had a significantly greater impact on both immediate and delayed issue attitudes than information news stories. As individuals we are cognitive misers, looking to draw conclusions with the least amount of effort, and media frames can help with this (Scheufele, 2000; Iyengar, 1990;). Thus, while the simplification of these complex issues may be of concern when it comes to a true understanding of the issue, it may be necessary for any sort of attention and at least a low level of understanding. There is emerging work in the policy literature that focuses on policy narratives as a critical yet understudied concept in the policy change literature, particularly the ACF. This body of work, called the Narrative Policy Framework, is closely aligned with the ACF and is best outlined in Jones et al., *The Science of Stories* (2014). As policy entrepreneurs (actors who hope to influence a policy outcome) seek to develop narratives around

a particular issue, media frames can be an important part of this process. These frames, however, can be double-edged swords.

The role of science in the policy process is complicated enough with issues such as tobacco or climate change, where scientific consensus has arguably been reached (Oreskes & Conway, 2010; Glanz et al, 1998). It becomes even more complicated with an issue like fracking, where scientific consensus on the environmental and health effects has not been reached. Combine that with the mismatched logics of the scientific process, the policy process, the political process, and journalistic processes, then the questions of how much actors should rely on science to develop their policy image, and how much scientists should participate in the policy process and public debate, become very real. I will explore these issues through a content analysis of media coverage of fracking in New York and North Carolina, combined with interviews with actors within these policy subsystems.

Research Questions

Given the concerns about the politicization in the literature, in this study I set out to explore how the anti- and pro-fracking coalitions might have used scientific evidence. ***RQ1*** explores how scientific evidence was deployed to develop policy image:

> ***RQ1****: How did the pro- and anti-fracking coalitions in New York and North Carolina deploy scientific evidence to develop their policy image?*

RQ2 looks specifically at the politicization (or not) of fracking and environmental science:

> ***RQ2****: How was scientific evidence politicized during the fracking debates in New York and North Carolina?*

To best answer these questions, I implemented a multi-method approach, incorporating both quantitative and qualitative content analysis, fieldwork, and interviews with actors in the fracking policy subsystems in New York and North Carolina.

Method

Media content is central to the study of media processes and effects (Riffe et al., 2014) and research has inextricably linked media to the study of politics, with a long tradition of using content analysis of newspapers to assess the media agenda for policy issues (recent examples central to this dissertation include Nisbet & Huge, 2006; Davis & Hoffer, 20012). Additionally, media, but especially news media, are an important factor in the public's understanding of scientific issues. In this study, I combined content analysis of media coverage of fracking in New York and North Carolina with interviews of actors involved in the policy subsystem debate. Two of the eight *frames* I used to analyze the news articles focused solely on science:

1. The scientific/technical uncertainty frame - focused on debate within the scientific community or industry, calls for more data or further research, or questioned research study results.
2. The scientific/technical background frame - gave a general background on fracking technology and/or a description of current or past research without taking.

Scientist/academic was one of the nine *source categories* for which I coded. I also looked at *source assertions* related to science. Three of the 14 assertions were related explicitly to science:

1. Questioning the science of fracking – noting deficiencies in studies showing fracking is safe and questioning fracking technology.
2. Questioning the science of environmental effects – noting deficiencies in studies showing fracking degrades the environment and public health.

3. Need for precaution – invoking the need to proceed carefully in light of uncertainties of fracking and environmental research.

I also coded for two assertions about fracking that did not mention science or technology at all:

1. Fracking is safe – general assertions that fracking is safe, without specific mentions of science, technology or fracking.
2. Fracking is unsafe - general assertions that fracking is unsafe, without specific mentions of science, technology or fracking.

With the content analysis, I explore how scientific evidence was discussed in the media through framing, sources used, and source assertions.

Through interviews, I explored how actors viewed the role of scientific and technical information in the fracking public debates. Finally, I include ethnographic observation and qualitative content analysis of media pro- and anti-fracking coalitions and their members, exploring how they deployed and discussed scientific evidence. I used names when public statements were made and as a default for interviews, but respondents were allowed to request pseudonyms. Public statements and interviews used in this study come from Susan Zimet, Frack Action New York; Hope Taylor, Clean Water NC; John Murawski, *Raleigh News & Observer;* a public education coordinator for a science-based group in New York; Kim Watson, a winery operator and farmer in New York; a member of the Joint Landowner Coalition of New York; a researcher at a public university in New York; and Terry Engelder, a researcher at Penn State University.

Findings

The literature raises concerns about the politicization of science when scientists enter public debates about environmental policy (Pielke, 2004; Oreskes, 2006; Jasanoff et al., 1989;

Herrick & Jamieson, 2001). My observations and content analysis outlined below show this to be true, as scientists are vilified and their research used to further claims that they themselves would not make. Additionally, the literature shows that journalistic norms and processes can be inconsistent with the scientific process, leading to coverage of environmental issues as controversies, as well as dependence on governmental sources (Friedman, 2015; Williams, 2012; Dunwoody, 2015) My content analysis outlined below showed this to be partially true, with North Carolina media using government sources the most, while New York media used environmental and energy advocates the most. However, scientific evidence was often evoked or questioned by sources in the media. Finally, the literature shows that frames and narratives can influence how environmental issues with scientific aspects are understood (Jones et al., 2014; Shen et al., 2014; Shanahan et al., 2011). My respondents discussed this in depth, and I outline below how they discussed the symbol of the flaming faucet and personal stories from affected farmer as useful tools in the public debate. However, as I outline below, fracking itself also became a symbol of something else, whether distrust of government or a litmus test for other values. This shows how fracking was politicized in such a way that it became part of a larger narrative.

Politicizing fracking.

The literature raises concerns about the politicization of science when scientists enter public debates about environmental policy (Pielke, 2004; Oreskes, 2004; Jasanoff et al., 1998; Herrick & Jamieson, 2001). My findings here outline how this played out in the fracking debates in North Carolina and New York, where the motives of scientists were questioned, especially in relation to the funding of their research. Additionally, my content analysis of the media showed that while scientific evidence is not itself a focus of media coverage, it is often used by sources

quoted in the media to bolster their arguments or argue against their opponents. Given the news media are still a source of information on environmental issues (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007) even while the resources available for in-depth environmental reporting decrease (Freidman, 2015, Anderson, 2014). This is an area that bears watching.

Researchers are often accused of bias, and their motives questioned, when results of their research inform policy debate (Pielke, 2006; Montpetit, 2011; Weible, 2008). For example, a group of Duke University scientists, whose research often supports the anti-fracking coalition's core beliefs and messages, are accused of anti-fracking bias (Murawski, 2014, September 16). On the other side, researchers whose findings show fracking can be done safely, such as Dr. Terry Engelder from Penn State University, have been accused of being fracking apologists (Murawski, 2014, September 16). Yet these researchers are not as far apart as these characterizations might lead one to believe. In a TedTalk, in 2012, Dr. Robert Jackson, a part of that renowned group of Duke scientists, stated:

> …we've never called for a ban on hydraulic fracturing because no has told me where the energy is going to come from… From an economic standpoint shale gas is absolutely transformational. It's abundant; it's domestic, and it's cheap. It's creating jobs; it's jumpstarting chemical manufacturing in this country. And if we use it to shut down coal plants, especially some of the old coal-fired plants, that's good for the environment too. But shale gas is still a fossil fuel too. Its pollution still heats the earth and acidifies the oceans… (Jackson, 2012, May 6).

Similarly, in another TedTalk in 2013, Dr. Terry Engelder did not shy away from the fact that shale gas drilling, and hydraulic fracturing in particular, do have a footprint; however, "natural gas offers the only solution right now to [address climate change]" (Engelder, 2013, July 3). However, these scientists are often depicted to be on one side or the other of the debate.

For example, an August 13, 2014 editorial in the *Raleigh News & Observer*, discussed the fact that while the MEC, tasked with developing regulations, met with industry

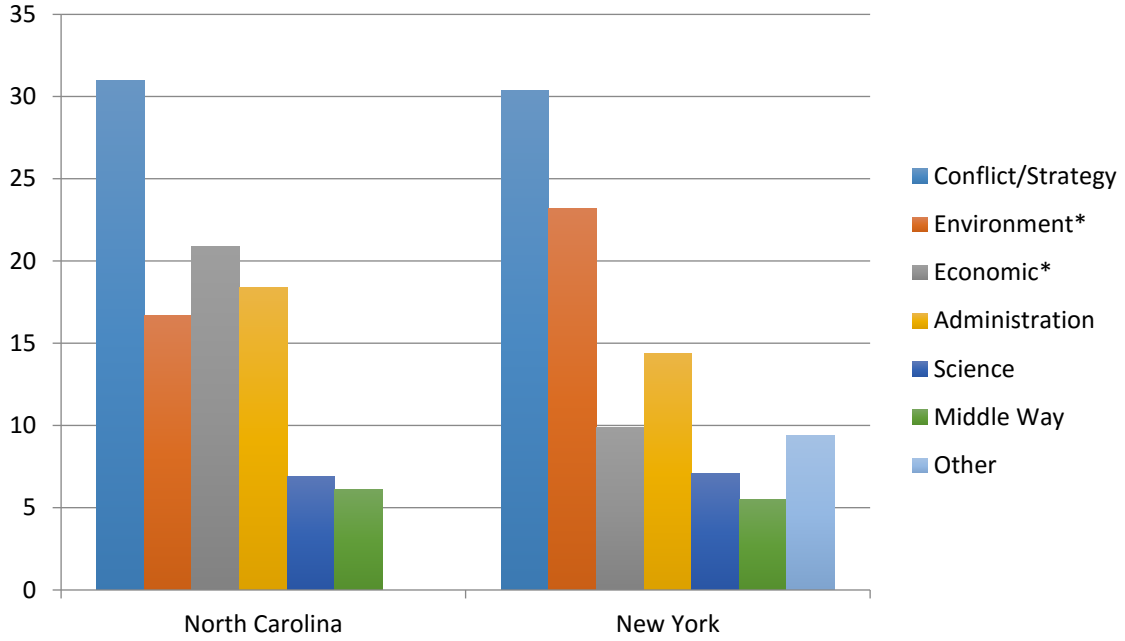
representatives, it did not meet with Dr. Jackson and other Duke researchers. It outlines just how easily science can become politicized:

> The industry, which got North Carolina to lift its moratorium on fracking and allow drilling to start next year, has long made the case that drilling is absolutely safe.
>
> Jackson and Vengosh have serious doubts about that, and given that the Nicholas School in the field of environmental science is considered among the elite in the country, it would be logical to assume that state officials developing rules to govern shale gas exploration would want to hear from them.
>
> But the N.C. Mining and Energy Commission did not invite either Jackson or Vengosh to offer any views while commission members were in the process of determining the rules.
>
> "With all due respect to Avner Vengosh," said recently resigned commission Chairman James Womack, "he's not interested in drilling. His studies are all aimed at the downside of oil and gas development."
>
> Vengosh says instead that he's all about science. (Editorial, 2014, August 13)

The implication of the Editorial Board is clear – that they are concerned state lawmakers were not relying on the best science in their policymaking, “because since taking over all three branches of state government, Republicans have loosened environmental rules in the name of being "business friendly" and to some degree because they have long viewed environmental protection as a "liberal" cause” (Editorial. (2014, August 13). When environmental policy issues are simplified into purely political issues, it is difficult for science to provide any sort of great impact. In fact, the science is then in danger of being politicized itself (Pielke 2004).

In my content analysis of sources and their assertions about fracking, I found that stories were framed in terms of science less than 10% of the time in both New York and North Carolina (see Figure 2.1).

Figure 2.1 Frames of Fracking in North Carolina and New York (%)



$X^2 = 71.26$, df = 6, $p < .00$. N = 1238. In North Carolina, the conflict/strategy frame was most prevalent at 31.0%, followed by the economic development frame at 20.9%, the government administration frame (18.4%), the environmental effects frame (which includes the public health frame) at 16.7%, the government administration frame at 18.2%, the science frame (including the uncertainty and background frames) at 6.9%, and the middle way/balance frame at 6.1%. In New York, the conflict strategy frame was also the most prevalent frame at 30.4%, followed by the environmental frame at 23.2%, the government administration frame at 14.4%, the economic frame at 9.9%, the science frame at 7.1%, and the middle way frame at 5.5%.
*Percentages between states are significantly different at $p < .05$ by the difference in proportion test.

While nearly 20% of the assertions questioned the scientific claims that fracking was safe, 10% questioned the scientific claims about the environmental and public health effects. Table 2.1 outlines the assertions made about fracking science and safety.

Table 2.1
Frequencies of Scientific Assertions Made by Sources in Each State (%)

Source Assertions	**North Carolina (N=961)**	**New York (N=2860)**	**Total (3821)**
Questioning the science of fracking	15.3	11.5	12.5
Fracking is unsafe	5.6	5.8	5.7
Need for precaution	34.1	25.0	23.6
Questioning the science of environmental effects	1.0	6.2	4.9
Fracking is safe	7.8	6.9	7.1
Need for precaution	34.1	25.0	23.6

In North Carolina, sources were three times more likely to question the science of fracking than to make general declarations about its safety, while in New York sources were about twice as likely to do so. On the other side, sources in North Carolina were much more likely to make general statements about the safety of fracking than question science about its environmental effects, while in New York it was about the same. Regardless, sources were likely to call on the need for precaution with the development of fracking regulations given the scientific uncertainty.

What this indicates is that while the science may not be a major focus of the fracking debate, it is being manipulated and politicized, just as scholars like Oreskes and Pielke fear. As one researcher in New York pointed out:

> …just the way you write your results matters, right? And I realized at that point that who I was, I consider myself very independent and not heavy-handed and here I was doing the influence of the funder and at that point we decided we would never take money for research from anybody with a financial stake in the outcome because I don't see any way to be independent. And actually there were some studies done, mostly in the biomedical field, that showed the best predictor of research outcome was who funded the study…I mean it's ironic of course because studies should be paid for by those who have a financial stake, right? (personal communication)

The question of funding of scientific research is a huge one. Part of the concern comes from accounts of the tobacco industry creating fake research, or cancer research ignoring industrial causes of cancer or energy companies deliberately mudding the waters about

climate change research. Yet this researcher, who is not trying deliberately to spread misinformation, is already thinking about how her work could be politicized. The question here is not so much the role of science in the policy debate, but the role of politics in the scientific process (Pielke Jr., 2004). One science education group, which gets funding from the National Science Foundation, has had to promise that it will only disseminate information and not advocate for either side:

> A key piece is that we have promised NSF that we will not advocate either for or against hydraulic fracturing and are doing our level best, recognizing that it is impossible to eliminate bias… but doing our level best to be as unbiased as possible, just the straight facts, and analyzing to some degree paying attention to the kinds of language that different folks are using when talking about these issues…That is part of the problem we are trying to deal with. A lot of people find biased information from whatever group they go to. We've found it to be really VERY difficult to find things that don't have a fairly conspicuous bias, including in the peer-reviewed literature. There are battles among Cornell faculty members on this. (personal communication, January 14, 2016)

What is interesting here is that even the peer-reviewed literature is suspect. Ostensibly, this should be where one could get, if not unbiased, the least biased information. Yet it is often questioned when science is brought into a political debate. One cannot help but wonder if some of this distrust of science, scientists, and scientific institutions stem from the tobacco and energy industries' well-funded misinformation campaign as outlined in Oreskes and Conway (2014).

Several respondents also noted the disconnect between science and public policy. Research into environmental policies, climate change especially, has shown such a disconnect (Oreskes, 2004; Sarewitz, 2004). It should not be surprising then, that actors such as Kim Watson, a winery operator and farmer in New York, also see the disconnect:

> I remember a while ago and this has got nothing to do with hydrofracking; it was just politics in general. And we were talking to this really conservative-arch conservative-guy and it was about President Bush. And I said, well, what about

> the environment because his policy was really lousy on the environment. And what about global climate change? And he said, " Oh! I'm not worried about that. Science will figure out ways to deal with it.…. 97% of the climate scientists agree we've got a problem, and only a few governments have more than lip served to this and every decade we've watched our window of opportunity to prevent huge climate disaster slip away and my thinking…I as a person cannot make much of a difference in an international way. So, I'm having to look to see what I can do to become more self-sustainable. (personal communication, December 17, 2015)

First, this idea of funding that we don't have to worry about the future echoes Lomborg's *The Skeptical Environmentalist.* Respondents often mentioned the source of funding scientific research as a criterion for determining whether the science was sound. Members of the anti-fracking coalition immediately deemed any research funded by energy companies suspect. In fact, the University of Buffalo had to close its Shale Resources and Society Institute after the institute came under fire for issuing a report many deemed to be endorsing fracking:

> "The institute says on its website that it's about independence, scientific integrity [and] nonbias," said Martha T. McCluskey, a UB law professor. "However, it appears that [the institute] received as least some industry funding, indirectly or directly, and that it has industry ties, and it was fundraising from the industry without comparable representation and involvement by other interests. So we think disclosure of that is important." (McNeil, 2012, October 3)

This story indicates that when science becomes involved in politics, then it is very easy for politics to become involved in science.

Referring back to Watson's quote, if climate policy, where scientists have largely reached consensus, still is not in line with climate science, why would fracking policy be in line with fracking science? And this assumes that there will be a consensus on fracking science, which to date, there is not. Finally, people have a complicated relationship with science. This gentleman is ignoring the science that climate change is real, while still relying on science to "fix it." Much of the literature on science and environmental policy has focused on climate change policy, showing that there is a disconnect between science

and policy (See Oreskes & Conway, 2010). If that disconnect exists when there is virtual agreement within the scientific community, then what role does fracking, as yet a contested science, have other than to be a pawn in the political games of actors?

Fracking symbols and stories.

The literature shows that frames and narratives can influence how environmental issues with scientific aspects are understood (Jones et al., 2014; Shen et al., 2014; Shanahan et. al., 2011). The respondents that I interviewed were aware of the power of stories in a policy debate like fracking. As a member of the Joint Landowners Coalition of New York said:

> It's stories. I mean we operate, you know 'my father smoked four packs a day and he never got cancer'…*Gasland* was stories, the flaming faucet was a story. I don't know the ways to reach people, you know again, we tend to watch the YouTube that our friends send us, so again, will that lady in line watch the YouTube of the mother who says everything was fine and then this came next door to me and my kid is now [sick]… (personal communication, February 19, 2016).

Gasland and the flaming faucet were mentioned often, in both North Carolina and New York.

Figure 2.2 Still of Flaming Faucet from *Gasland.*

A powerful symbol of the anti-fracking movement, this image created controversy when pro-fracking coalition members challenged the claim that the methane came from fracking operations.

As Susan Zimet of Frack Action New York noted, “I’m sure you've seen *Gasland*, the movie…so you know the famous flaming faucet. To me, and that movie in whole, do I think it was, quote unquote, “biased”? Yeah. Do I think it was effective? Yeah. And you know, do I

think the flaming faucet is the worst of all the issues? No. Do I think it was a fabulous thing, that it caught [media] attention? Yes" (personal communication, January 10, 2016). Energy in Depth, a group sponsored by a coalition of natural gas companies and a member of the North Carolina Energy Coalition, asked the Academy of Motion Picture Arts and Sciences that Gasland be removed from Oscar contention for falsifying facts, particularly the flaming faucet (Cruger, 2011, February 12). Part of the importance of a good narrative is the ability to capture media attention. Returning to the literature, then, if a flaming faucet brings attention to an issue, then that is good. However, it is when the narratives become divorced from facts that the narrativization of the science becomes an issue.

People remember anecdotes and stories, not facts. Hope Taylor, of Clean Water North Carolina, when talking about effective presentations on fracking, highlighted the importance of stories:

> …we had our statewide summit on fracking in September of 2011 and it invited both one of the stars of *Gasland*, Calvin Tillman, to be a speaker, one of the scientists from Duke, who had written the paper that industry had loathed so deeply about methane found in New York and Pennsylvania wells close to gas operations, and two Pennsylvania farmers, as well as two other folks from the Duke Environmental Law program and so forth. And the Pennsylvania farmers turned out to be the biggest hit of all, so we brought them back in November for another set of tours and a fair amount of media attention. (personal communication, April 22, 2015).

For her, the farmers who had actually lived with fracking and could tell their first-person story were more effective than any facts or scientist.

Fracking as a symbol.

The literature raises concerns about the politicization of science when scientists enter public debates about environmental policy (Pielke, 2004; Oreskes, 2004; Jasanoff et al., 1998; Herrick and Jamieson, 2001). It also shows that frames and narratives can influence how

environmental issues with scientific aspects are understood (Jones et al., 2014; Shen et al., 2014; Shanahan, et. al. 2011). Bringing those two scholarly concerns together, I show how fracking became a symbol of something more.

As part of the rule-making process in North Carolina, the MEC held a public comment period from July 15 to September 30, 2014, which included four public hearings where a total of 341 people spoke (North Carolina Mining and Energy Commission, 2014, November 6). The vast majority of the speakers at these meetings spoke out against fracking (personal observations August 20, 2014; August 22, 2014; and September 12, 2014). These observations were also corroborated by subsequent media coverage of the hearings. One of the main requests made by many of those in attendance was a call to reinstate the ban on fracking in the state. While on its face this may seem like a reasonable request, it belies a lack of understanding of the purpose of the meeting. The North Carolina General Assembly had lifted the ban and tasked the MEC with developing the draft rules and the public comment meetings were part of that process. The MEC did not have the jurisdiction to reinstate the ban – only the General Assembly can do that. However, many of the speakers were angry that the bill had been passed without their input, so they were going to include this request at these meetings. For them, the regulatory body of the MEC and the legislative body of the General Assembly were one and the same.

While Frack Free NC, the anti-fracking coalition in North Carolina, put out talking points that were full of facts and utilized by many of the speakers, it was the impassioned speakers who talked of their families growing up on their land for generation and not wanting it ruined by fracking that made the most impact for the crowd, eliciting cheers and boos as they supported or disagreed with the statements (personal observation, August 20, 22, 2014; September 12, 2014). Many of these speakers also railed against the MEC, the Department of Environment and Natural

Resources (DENR), and the state legislature for developing the legislation that allowed fracking in the state with little to no public input. Fracking quickly became a symbol on many different levels, and it "took on significance for people that went beyond the actual benefits and risks, the amount of time spent on it, the amount of energy people put into it, the amount of rhetoric spent on it, I think transcended the actual benefits and risks (Murawski, personal communication, October 28, 2016). For many people in North Carolina, fracking became about a distrust of the state government.

Discussion and Conclusion

According to the literature, conflation of science with public policy and politics, as well as the journalistic processes that can often lead to confusion the between science, the public, and policymakers (Nelkin, 1995; Oreskes, 2004; Sarewitz, 2004; Pielke, 2004; Jasanoff et al., 1998). Part of this issue is the need for policymakers to make decisions, often before scientific consensus can be reached, and often with the need to weigh other factors than just the science (Pielke, 2006; Oreskes, 2004). Additionally, policy subsystems exist to keep government moving, as the public, media, and policy agendas do not have infinite room for issues (Baumgartner & Jones, 2010). While it seems as if science is less likely to be politicized when a policy subsystem is operating without public and media scrutiny, this scrutiny is at times necessary. A better understanding of the way science, policy, and politics operates is necessary to ensure that when science does become part of public debate, it is useful in helping policymakers and the public understand policy issues.

Science, policy, and politics.

Science, politics, and policy are inextricably intertwined (Pielke, 2004; Oreskes, 2004). Yet scientists have, at best, a mixed view of the way public policy utilizes science, particularly

regarding environmental issues, according to a recent Pew Research report (Pew Research Center, 2015, January 29). The report states that only 15% of scientists who are members of the American Association for the Advancement of Science (AAAS) think that the best scientific information guides government regulations when it comes to land use regulations, while 27% think the same about air and water regulations. This seemed to bear out in North Carolina, where lawmakers and regulators seemingly moved forward with fracking regulations with little to no input from academic researchers (though it should be pointed out that the members of the Mining and Energy Commission were engineers, albeit engineers with strong industry ties). In New York, however, science seemed to guide the rulemaking process (or at the very least guided the delays New York saw in the rulemaking process in light of scientific uncertainty). Members of the pro-fracking coalition in New York and North Carolina, however, would take a markedly different view.

Is there a disconnect?

It is this exact uncertainty that leads to the politicization of science. In light of scientific uncertainty then, fracking became a symbol of something more. In North Carolina, fracking became about the distrust of the state legislature, as many felt the fracking legislation was developed outside of the public view and with little public input. In New York, fracking became about distrust of industry, as evidence by the closing of the University of Buffalo's shale research institute. Yet in New York, the legislative and regulatory process seemed to be more transparent than in North Carolina. I should point out here that I am dealing in public perception of the policy processes in each state, not making claims about the actual transparency of lawmakers. The issue became controversial in each state very quickly, and as result, scientific

research was politicized, especially in North Carolina, which is not surprising given previous research (Montpetit, 2011; Weible, 2008).

According to the literature, conflation of science with public policy and politics, as well as the journalistic processes, have led to a disconnect between science, the public, and policymakers (Nelkin, 1995; Oreskes, 2004; Sarewitz, 2004; Pielke, 2004, 2006; Jasanoff et al., 1998). Part of this issue is the need for policymakers to make decisions, often before scientific consensus can be reached, and often with the need to weigh factors other than just the science (Pielke, 2004; Oreskes, 2004). Additionally, policy subsystems exist to keep government moving, as the public, media, and policy agendas do not have infinite room for issues (Baumgartner & Jones, 2010). While it seems as if science is less likely to be politicized when a policy subsystem is operating without public and media scrutiny, this scrutiny is at times necessary. It is this public scrutiny that also keeps governmental powers in check (Cook, 1998).

A better understanding of the way science, policy, and politics operates is necessary to ensure that when science does become part of public debate, it is useful in helping policymakers and the public understand policy issues.

Chapter 3 – The Multifaceted Media: The Role of Media in the Fracking Policy Debates

The role of media in policy debates has long been a focus of academic researchers, political pundits, and media critics. While policy change researchers have assumed media are important, they have never been able to fully conceptualize or agree on the media's role (Shanahan et al., 2011; Crow, 2010; Wolfe et al., 2013). As media fragmentation has increased, direct outreach between policy system actors and constituents has become easier, and more and more people seem to be tuning out of the political process altogether (Webster, 2014; Wolfe et al., 2013). Because of this the role and importance of media has become a subject of debate. Still, the amount of time, money, and other resources spent on controlling media messages increases (Allen, 2015). Media are especially important for environmental and energy policy issues like fracking, with which actors may be unfamiliar and which can have long-ranging implications for the community, environment, and economy in states where it is implemented.

In June 2015, the U.S. Environmental Protection Agency (EPA) released a comprehensive report on the effects of hydraulic fracturing on drinking water. The report raised concerns about isolated incidents of water pollution but found no systematic evidence of damage, yet media coverage focused on the controversy between pro- and anti-fracking coalitions (Warrick, 2015, June 4). The previous absence of federal guidance has led states to develop their own fracking regulations, and the final development and management of fracking rules is likely to remain at the state level for the near future (Davis & Hoffer, 2012). As fracking has become more popular, the controversy around the topic has grown at both the state and federal levels,

with increased attention for the public and the media, particularly beginning in 2010 (Mazur, 2014).

To understand better the role of media in a developing policy debate, this chapter brings together framing research from the political science and communication research traditions through the lens of the ACF. Using the ACF, I examine the fracking debate and policy development in North Carolina and New York. North Carolina has a small amount of shale gas available, yet fast-tracked legislation to develop fracking regulations in the state, despite increasingly conflicted public opinion on the subject. New York, which sits on the natural gas-rich Marcellus Shale, put into place a moratorium on fracking. In New York, fracking entered onto the media agenda with full force in 2010, while media in North Carolina virtually did not cover it until 2011. Through a content analysis of media coverage and interviews with stakeholders in the debate, I explore the role of media in the fracking debate in New York and North Carolina, which saw the development of very different fracking legislation.

In the previous chapter, I outlined how my model explores the politicization of scientific and technical information within the ACF. In this chapter I focus on the media's role in that politicization. I also explore how early in the policy process the media served as a source of information about fracking as well as an actor in framing the debate. I also explore the relationship between media and other actors within the policy subsystem, particular with regards to trust. Through the lens of the ACF I will explore how both the pro- and anti- fracking coalitions used media to develop their policy images of fracking, as well as how journalists were actors who framed, interpreted, and an analyzed the debate.

Literature Review

ACF and the role of media in environmental policy.

A broad definition of public policy includes formal decision, laws, and regulations, as well as the underlying mechanisms that govern the policy process. Policy researchers study "the interactions over time between public policy and its surrounding actors, events, and contexts, as well as the policy or policies' outcomes" (Weible, 2014, p. 14). The ACF is particularly useful for studying environmental policy debates. In fact, from 1987 to 2013, environmental policy issues account for more than half of all empirical applications of the ACF (Jenkins-Smith et al., 2014).

Researchers implementing the ACF seek to explain empirically the dynamic process of policy change by focusing on policy subsystems and their coalitions (Shanahan et al., 2011). Policy subsystems are the community of actors that coalesce around a particular issue that often operate outside of the public eye, especially for policy issues with strong scientific and technical components (Baumgartner & Jones, 2010). According to the ACF, actors within these coalitions who share core beliefs about a particular issue and coordinate their actions around that issue can be grouped into coalitions (Jenkins-Smith et al., 2014). While coalitions in the ACF can vary in their level of resources, formality, and size, the coalitions in the fracking debate (anti-fracking or pro-fracking) in New York and North Carolina were relatively well-formed and official, especially on the anti-fracking side. Coalitions have been one major theoretical focus of the ACF, with policy learning, which refers to the shifting of beliefs among coalition members, and policy change, which refers to alterations to a policy that deviate from a previous policy, comprising two more major theoretical foci (Jenkins-Smith et al., 2014).

One of the main assumptions of the ACF is that the relevant actors within a policy subsystem include "any person regularly attempting to influence subsystem affairs…and may include officials from any level of government, representatives from the private sector, members from nonprofit organizations, members of the news media, academic scientists and researchers, private consultants and even members of the courts (Jenkins-Smith, 2014, p. 190). Very few empirical applications of the ACF have focused on the role of the media (Shanahan, et al., 2008). One reason for this could be the fact that the setup of the ACF, looking at actors as members of a coalition, is automatically at odds with the accepted view of the media's role as an actor as fair or balanced (Weaver et al., 2009).[4] While the concepts of unbiased and balanced reporting are debated within media studies, roughly three-quarters of journalists still see their role as disseminating or interpreting information for their publics, versus actively mobilizing around a certain issue (Weaver et al., 2009). Shanahan et al., (2008) noted the duality of roles of the media:

> The Advocacy Coalition Framework (Sabatier & Jenkins-Smith 1993) briefly identifies the role of the media as both a conduit - a resource for members to influence policy outcome (p. 227) - and a contributor- a member of competing advocacy coalitions (p. 183). In their extensive work, the careful, systematic coding of the advocacy coalitions did not include the media, and yet the authors anecdotally recognize both roles of the media in the policy arena. Clearly, there is a need for empirical examination to determine whether the media plays the role of conduit in the policy debate or contributor as an advocacy coalition. (p. 118)

Perhaps because of this complexity of the media's role in policy debates, only a few empirical studies even tangentially examine the media.

In one of the few empirical tests of the ACF to focus explicitly on the role of the media, Shanahan et al. (2011) examined whether media served as a conduit or contributor in the policy

[4] While the ACF does account for actors that influence debate without intending to do so, I argue here that the coalition set up does not create a good fit for media.

process. They examined policy controversies in the Greater Yellowstone Area (GYA) using a content analysis of news stories. The researchers found that the media served as both conduit (resources) and contributor (actor) in the debate, depending on the set of policy beliefs:

> We had expected the media to be consistently contributors or conduits across all three policy beliefs; thus, the split nature of our results was surprising. As indicated earlier, these results mean that the media add to the intractability of the policy issue when the problem is understood as a federalism issue, but that they add to policy learning at the environmental level when the policy is discussed along the environmental beliefs. (Shanahan et al., 2008, p. 131)

In other words, the role of the media is dependent on other factors related to a policy issue. This leads us to several questions related to research into the role of media in the policy debates. Is the goal for media to bring attention to a policy issue? To sway public opinion? To influence the policy outcome?

Previous and current research shows the complexity of conceptualizing media in policy debates. Media coverage is often conflated with public opinion, not only in policy research, but also in the minds of the strategic actors within a policy subsystem (Herbst, 1998; Kingdon, 1984). In an examination of the ACF and natural resources policy development, Sotirov and Memmler (2012) also found a connection between media and public opinion, noting that media campaigns can influence public opinion, while shifting public opinion can influence media support. Finally, there is emerging work in the policy literature that focuses on policy narratives as a critical yet understudied concept in the policy change literature, particularly the ACF (Jones et al., 2014). As policy entrepreneurs (actors who hope to influence a policy outcome) seek to develop narratives around a particular issue, media frames can be an important part of this process. However, the role of the media, whether as conduit or contributor, can be dependent on factors both external and internal to the policy subsystem.

Agenda setting and framing.

An examination of the role of the media within the ACF is best understood by using the theoretical approaches and concepts of agenda setting and framing research, which for too long have developed on parallel paths in the communication and political science literature (Cacciatore, Scheufele, & Iyengar, 2016; Scheufele & Tewskbury, 2007; Wolfe, Jones, & Baumgartner, 2013). In order to understand the role of the media in the policy process, it is necessary to bring together these two literatures. Several decades of agenda setting and framing research show that attitudes and opinions about policy issues can vary depending on what issues (and what aspects of an issue) are emphasized (Scheufele & Tewksbury, 2007; Iyengar,1998; Baumgartner & Jones, 2010). Frames can be used to define a problem, diagnose a cause, make moral judgments, or suggest remedies to a problem (Entman, 1993; Maher, 2001). I discuss agenda setting and framing together here because they are difficult to tease apart, as evidenced by the long-standing feud between agenda setting and framing researchers within the communication literature (Entman, 1993; Maher, 2001; Cacciatore et al., 2016).

Media effects researchers have struggled to develop a consistent definition of or explanatory model for framing, though many media effects researchers focus on the cognitive schema activated by certain frames (Scheufele & Tewskbury, 2007; Maher, 2001; Entman, 1993; Cacciatore et al., 2016). Yet other media framing researchers incorporate a sociological view of framing which focuses more on how frames are constructed (Cacciatore et al., 2016). To examine the role of media and media frames in the policy process, it is important to understand their role in the development of a policy image. To do so, we must understand framing from the political, sociological, and media effects traditions.

Media and policy change.

Both policy and media scholars link media and public opinion, noting that media coverage forces elected officials to pay attention to certain issues, as well as certain aspects of certain issues, either expanding or constraining policy development (Herbst, 1998; Wolfe et al., 2013; Crow, 2010; Nisbet & Newman, 2015). The media can also serve as resources for policy entrepreneurs, who use the media to transmit their issue definition in order to mobilize groups and citizens to achieve policy success (Baumgartner & Jones, 2010; Shanahan et al., 2011; Nisbet & Huge, 2006). Other scholars have noted that the media can be actors themselves within the policy process (Druckman, 2005; Druckman & Parkin, 2006). Ultimately though, while the assumption is that the media are important to the policy process, their roles have never been fully conceptualized**.** Additionally, a growing body of media criticism has begun to question whether the media even matter at all, given the influence of other factors (see Wolfe et al., 2013).

Research Questions

This study set out to answer two questions related to the role of the media in the policy process. The first looks at the media as actors within a policy debate, while the second looks at how other actors may use the media in a policy debate.

RQ1: *How did the media within the fracking policy subsystems in New York and North Carolina serve as actors influencing the policy debate?*

RQ2: *How did the media within the fracking policy subsystems in New York and North Carolina serve as a resource influencing the policy debate?*

To best answer these questions, I implemented a multi-method approach, incorporating content analysis of media, fieldwork, and interviews with actors in the fracking policy subsystems in New York and North Carolina.

Method

Media content is central to the study of media processes and effects (Riffe et al., 2014) and research has inextricably linked media to the study of politics, with a long tradition of using content analysis of newspapers to assess the media agenda for policy issues. (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007). Additionally, media, but especially news media, are an important factor in the public's understanding of scientific issues. (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007).

In this study, I combined content analysis of media coverage of fracking in New York and North Carolina with interviews of actors involved in the policy subsystem debate. This content analysis included 837 articles in New York and 411 articles in North Carolina. Each article was coded for one of the following main frames:

- Environmental effects - focused on environmental impacts and risks, such as air and water quality.
- Public health effects – focused on issues related to public health, such as gag orders without mentions of the environment.
- Economic development – focused on jobs created by fracking and fracking as an energy source.
- Conflict/strategy – focused on who is "winning" or "losing" the debate, or fracking as a tradeoff between environmental protection and economic development.
- Balance for the community – focused on the effects of fracking on the community, including a focus on a balance of environmental and economic considerations for the good of the community.

- Government administration – focused on how bills or regulations were being develop or administered without a focus on strategy of the actors.
- Technical/policy background – focused on the history of fracking in the state or the technical background of fracking without focusing on its uncertainties.
- Technical/policy uncertainty – focused on the unknowns of fracking, including the struggles among government leaders with how to regulate it and the availability of fracking in the state.

With this content analysis, I explored how fracking was framed in the media.

Through interviews, I explored how actors viewed the role of media in the fracking policy debate. I also included ethnographic observation and qualitative content analysis of media coverage. I used names when public statements were made and as a default for interviews, but respondents were allowed to request pseudonyms. Public statements and interviews used in this study come from Susan Zimet, Frack Action New York; Theresa Vick, Blue Ridge Environmental Defense League; Robert M. Ciesielski, chair of the Niagara Group of Sierra Club, Atlantic Chapter, Roger Downs, conservation director for the Sierra Club Atlantic Chapter; Dennis Harkawik, an environmental lawyer, Joseph Golombrek, Jr., a member of the Buffalo (NY) Common Council; Darryl Moss, mayor of Creedmoor, NC; Fred Lebrun and Chris Churchill, *Albany Times Union*; John Murawski, *Raleigh News & Observer*.

Findings

The role media in the policy process is conflicting. On one hand, media scholars suggest that media are a source of information for the public, especially local newspapers and especially for environmental issues (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007). Other scholars have suggested that with the increase in media fragmentation, the media's role in public

debate may be shifting (Webster, 2010; Wolfe, 2010). My findings, outlined below, show that, in certain circumstances, media do still play a role in public policy debate. This was especially true when the fracking issue first appeared on the public agenda. I additionally show that media served as a source of information not just about an issue, but also about the stakeholders involved in the public debate. This is true for not just the public, but for stakeholders at the outskirts of the policy subsystem. The literature suggests that media are conflated with public opinion (i.e., Herbst, 1998). However, my findings do not indicate this. My research indicates that to a certain extent media can set the agenda or frame an issue, especially early on in a policy debate and at the local level. In accordance with more research into the role of media in the policy process, the influence is incremental, rather than direct. Additionally, the watchdog role of the press is seen as important. These findings, taken together, indicate that media can be seen more as a guiding influence in the public debate of fracking.

Media as sources of information.

Despite concerns that media fragmentation has decreased the influence of media in policy debates (Webster, 2014), one of the biggest themes throughout the interviews is that the media are a major source of information, especially in the initial stages of the debate. In fact, in 19 of 31 non-media interviews, the media were discussed unprompted in answer to the question, "Where did you first go for information about fracking?" As one public health government official noted early in the debate in North Carolina, he and his colleagues relied on media for information:

> I'll be honest with you as far as a public health professional, we haven't received much information. Mine has actually been mostly through the media just like I think the general public's has been. Just while reading the newspapers and what I hear on television stations and you know again just talking about it more politically and how it appears that the folks in Raleigh are trying to push this through pretty quickly. I know based on what you hear them saying the potential

> for, you know, having natural gas or even in some cases oil, is great. They see that potential there and I guess less dependency on foreign sources, for our country as far as our oil production and things like that go, but I think most people are getting their information through the media, both printed and the televisions and things like that. (personal communication, June 15, 2014)

This tracks with research that shows media are sources of information for the public, especially local newspapers and especially for environmental issues (Riffe & Reimold, 2008; Riffe et al., 2007). However, this is not a member of the general public, but a potential actor within the policy subsystem forming around fracking. This theme indicates that when actors do not know about an issue and do not know where to turn, their first stop is the media.

North Carolina respondents mentioned the media as a source of information about fracking for themselves more than those in New York, which makes sense given the differences in the policy subsystems of each state. In New York, the issue of fracking became part of the already well-developed policy subsystem related to natural gas drilling, which had been debated in New York for many years previously. North Carolina actors had no such policy knowledge of fracking and natural gas drilling, so the policy subsystem and coalition of actors that would coalesce on either side of the issue were relatively new and unformed. Therefore, while policymakers with a background in energy or engineering likely knew about fracking, most of the actors within the policy subsystem relied on the media for their information, at least initially.

Another theme that developed as I talked to respondents was the idea that media are used to track the actions and strategies of actors of opposing coalitions, as well as other actors within the state. Especially in New York, when respondents discussed media

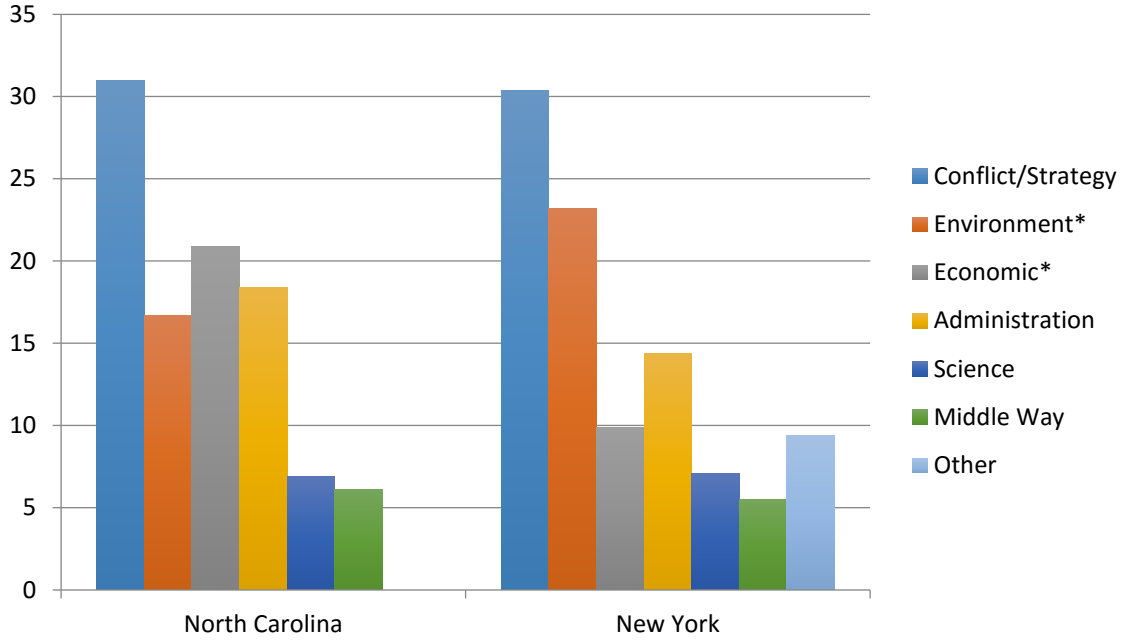
as sources of information for themselves, it was to discover the actions of other stakeholders. As one county health director pointed out:

> Well, part of it is that you have strongly opposing advocates or lobbyists on the different sides and then when it gets to the government agencies or at least through the state health department…it's so political that they are not releasing information readily. You know I don't know how much the different agencies are talking to each other, I don't know how much the different divisions and agencies are talking to each other. I know I would like to see more communication. That has been a frustration during our process is that we find out through the media what's going on when it can be something that could have a direct impact on us. So I guess part of my frustration right now or difficulty in answering your question is I'm not as actively engaged in the issues because there's so little information flowing on it. (personal communication, June 22, 2014)

Assertions like this indicate that actors within a policy subsystem, particularly those that may not be at the core of the decision-making, will rely on media for information on the state-level policy process. This is especially interesting if you look at how fracking was framed in the content analysis.

Figure 3.1 shows the prevalence of frames in media coverage of fracking in North Carolina and New York, with the conflict/strategy frame most prevalent in both states, while North Carolina media coverage framed the debate more in economic terms and New York framed the debate more in environmental terms.

Figure 3.1 Frames of Fracking in North Carolina and New York (%)



$X^2 = 71.26$, df = 6, $p < .00$. N = 1238. In North Carolina, the conflict/strategy frame was most prevalent at 31.0%, followed by the economic development frame at 20.9%, the government administration frame (18.4%), the environmental effects frame (which includes the public health frame) at 16.7%, the government administration frame at 18.2%, the science frame (including the uncertainty and background frames) at 6.9%, and the middle way/balance frame at 6.1%. In New York, the conflict strategy frame was also the most prevalent frame at 30.4%, followed by the environmental frame at 23.2%, the government administration frame at 14.4%, the economic frame at 9.9%, the science frame at 7.1%, and the middle way frame at 5.5%.
*Percentages between states are significantly different at $p < .05$ by the difference in proportion test.

The prevalence of the conflict/strategy frame is especially of interest here. Media have often been critiqued for their focus on conflict and strategy (see Schudson, 2012). However, if actors within the policy subsystem stay apprised of what other actors are doing through media, then perhaps this media and policy critique is misdirected. Between the conflict/strategy and government administration frames, the media are doing their job of monitoring government and other actors within the policy subsystem. Additionally, with the statistically significant differences between North Carolina and New York in the economic development and environmental effects frame, the media coverage tracks closely with the ultimate legislative outcomes.

There are several issues with assessing the role of media in a policy debate. First, the control of information in a policy debate is important. When it comes to policy subsystems, the media can only be as effective as the information they are given (or are able to uncover). Second, the media's role within a policy subsystem can be dependent on the communication, or lack thereof, among the actors within the policy subsystem. This can include the strength of the coalitions on either side, as well as the communication between actors on separate sides of the debate.

These results indicate that media serve as source of information for actors within a policy subsystem. Especially early on in the debate, the actors turned to the media for information on fracking, especially given that it was a relatively new technology with which few were familiar. This indicates that the influence of the media is related to where an issue is in the policy process. This is extends other models that have shown that issues can cycle in and out of importance within the media, public, and policy agendas (Downs, 1972; Nisbet & Huge, 2006).

Additionally, these results show that media are used as more than just a source of information about a particular issue. Actors within the North Carolina and New York fracking policy subsystems relied on media to learn about other actors within the policy subsystem, as well as to get their own messages. They also used media differently depending on their needs and aspirations within the policy system. Media are orienting, and thus looking at media as simply a conduit/resource or contributor/actor may be too simple a dichotomy.

What do we mean by media?

However, what is meant by media can be a point of contention. Just as within the academic literature studying media and policymaking, questions of true journalism and real

media were often brought up. When we discuss media, should we refer to only hard news stories? What about editorials, columns, and opinion-editorials? What about documentaries, such as *Gasland*, that draw attention to a policy issue and create their own media coverage? Kirk Smith, a commissioner in Lee County in North Carolina, highlighted the complexity of determining what the term "media" means:

> I do credit *Gasland* with waking up the media, but even before *Gasland* came out, we had the *New York Times* doing an excellent series that included the contamination of the Monongahela by wastewater treatment plants and its impact on Pittsburgh and communities downstream. A whole series with really detailed documentation which, you know, I've spent two days going through some documentation that they had linked to those reports. Good agency stuff that they never thought the public would look at. So, and then *ProPublica* also started about the same doing excellent research—Abraham Lundstgarden had a whole series of reports. (personal communication, February 2, 2016)

North Carolina bears out the connection between the media and policy agendas, not only through the connection in the coverage of the media to the legislative actions outlined in the case study in Chapter 1, but also through the interviews conducted with various stakeholders. Smith discussed the increasing news coverage of fracking:

> Obviously, that's been increasing since last year. About a quarter of the folks had been hearing about it on the news before this last legislative session—and that really increased because you know, the state media obviously paid a lot more attention to that. And the local papers, particularly in the counties that could potentially be impacted began picking up on it. The local legislators were either advocating for it, which was true in you know, Moore and Stokes and many other outlying counties. And even, you know, in western Wake you had Murray and other conservative legislators saying that, "you know, this is a real job opportunity that the State shouldn't pass up." But both the national media attention to the issue really picked up and the state media while the Legislature was debating it and this become the iconic issue of this session. And so, the last several presentations essentially everybody'd heard about it on the news. (personal communication, February 2, 2016)

Even more so in New York than in North Carolina, respondents made a distinction between "true journalism" and other forms of media. They were also more likely to distinguish between media

and information shared online. As one respondent noted, "…it's really amazing to me the stuff people share online and will post the number of reports and things that we all gain access to. It's quite remarkable, the Internet, and how it's being utilized" (Zimet, personal communication, January 6, 2016). Questions regarding the media also yielded discussion about *Gasland* in New York, particularly the flaming faucet. As one county environmental health director on New York noted, "I'm sure you've seen *Gasland*, the movie…so you know the famous flaming faucet. To me, and that movie in whole, do I think it was, quote unquote, "biased"? Yeah. Do I think it was effective? Yeah. And you know, do I think the flaming faucet is the worst of all the issues? No. Do I think it was a fabulous thing, that it caught [media] attention? Yes" (personal communication, June 30, 2014).

Across the board, while respondents identified the media as sources of information, they also acknowledged that other forms of outreach, such as the symbol of the flaming faucet, were likely more effective in drawing attention to the environmental concerns. Interestingly, no such symbols existed for those touting the economic and energy benefits of fracking. Additionally, local news media were mentioned interchangeably with news media from other states as well as national news media. In fact, respondents in North Carolina mentioned the *New York Times* just as often as respondents in New York. The *New York Times* published a series of articles very early on in the fracking debate in New York that were available before many news organizations in North Carolina began covering the issue. This highlights the fact that the media diet for those intimately involved in a policy debate is varied and can encompass local, regional, and national news media, as well as alternative forms of media such as documentaries and industry publications. This tracks with scholarship on contemporary media systems that suggests the United States has a hybrid media system, made up of the logics from both *old* media and *new*

media (Chadwick, 2013). Extending this idea, then, to understand the media within a policy subsystem we must understand the logics of media as both resources and actors.

Media as policy subsystem (un)actors.

While the focus of much research in media and policy change has focused on the media as conduit (i.e. Shanahan et al., 2001), actors within the North Carolina fracking policy subsystem pointed out their influence as actors. The media can be incredibly influential, especially for local communities, such as those that tend to fall within the areas most affected by fracking. Darryl Moss, the mayor of Creedmoor, North Carolina, which sits in one of the areas that could be affected by fracking, pointed out, "I'm fond of saying, 'If it's in the newspaper, it's pretty much the gospel.' And, then, the funny part about that is, it's a weekly newspaper. I used to joke with Harry [the publisher] that, my, for most folks their day starts on Monday, my day, my week actually starts on Thursday because, depending on what his editorial was and his headline was, pretty much determined how my week was going to go" (personal communication, December 14, 2015). Moss went on to detail the influence of the now-deceased publisher in raising the importance of environmental issues within the local community.

Once again, the context matters when determining the influence of the media. Just as time, actor knowledge, and actor relationships matter, so too does the geographic location and more specifically the size of the community. This indicates that media are more likely to have a direct legislative effect in local communities versus at the state and national level, as the field of actors within a policy subsystem becomes more crowded. Interestingly, while looking at media as a source of information, the distinction between old and new, national and local, journalism or editorial, was less important. However, these distinctions become extremely important when looking at media as actors in the policy debate.

In October 2012, Governor Cuomo extended the deadline for making a decision about whether to allow fracking in New York when most actors within the subsystem thought fracking was inevitable. Fred Lebrun, a columnist for the *Albany Times Union*, called the hold "one of the most dramatic turnarounds I've witnessed from state decision makers" in an October 8, 2012 column. Lebrun went on to determine that the Cuomo administration had "underestimated the fervor and depth of opposition to any form of fracking" and that "officials running for election from local posts up to Congress have supposedly gotten word to the governor to not make fracking an issue during the election cycle because it is a toxic issue." While Lebrun highlighted extramedia influences in the ultimate decision, he did acknowledge in an interview, "Media reports over the summer revealed the administration was contemplating allowing fracking in a limited number of towns where a majority of residents and…or local leaders welcomed it. These reports could have helped the activists draw more attention to the issue" (personal communication, November 6, 2015). As another reporter, Chris Churchill, pointed out, "You have to believe New York would have allowed fracking if not for the deeply committed activists who so loudly opposed it" (November 9, 2016). These activists often used media campaigns to mobilize interested publics on their behalf.

However, while the media definitely played some role in the debate, how instrumental were they? Lebrun also noted, "An attorney for one of the big environmental groups the governor had hoped to sway told me that if natural gas prices tripled, which is what it would take to be clearly profitable, there would be fracking going on right now in New York, and there wouldn't be much we could do about it" (November 6, 2016). This supports the ACF assertion that external factors can be an important influence in a policy subsystem (Jenkins-Smith et al., 2014).

In North Carolina, stakeholders discussed debates and negotiations that took place secretively behind closed doors—or at the very least under the radar for the media and the public. These types of negotiations are not uncommon in policymaking, and in fact, political science scholars argue that they are instrumental to the function of government, particularly with respect to technical issues (Baumgartner & Jones, 2010). However, these policy subsystems can be used, or appear to be used, to keep certain matters from public debate. This was incredibly evident in the North Carolina case, and two examples of this stand out.

During the legislative debate in March 2014 over Senate Bill 786 that fast-tracked the fracking legislation, several amendments were proposed throughout the debate on the General Assembly floor. Most of these amendments were dismissed without debate by Republican legislators, while debate on others was limited. An environmental advocate working the Southern Environmental Law Center sitting in the audience—who was familiar with the workings of the North Carolina General Assembly—called it the "worst miscarriage of environmental justice" that she had ever seen (personal observation, May 27, 2014). Subsequent media coverage pointed out, "The legislation was first unveiled in the House less than 24 hours before the vote, moving through two committees with almost no public notice. It was moved onto the House floor Wednesday through a parliamentary maneuver" (Leslie & Binker, 2014, May 28).

Another example centers on the debate of what is known as the Halliburton Rule. In May 2013, as they were developing the North Carolina fracking regulations, the Mining and Energy Commission (MEC), the group tasked with developing the fracking rules, delayed voting on a chemical disclosure standard "in response to objections from energy conglomerate Halliburton and top officials within the state's environmental agency…considered one of the most important rules governing fracking" (Murawski, 2013, May 4). According to Murawski, this reflected a

larger tension between the MEC, the state Department of Environment and Natural Resources (DENR), and legislative leaders within the state (personal communication, October 28, 2015). While the MEC and DENR meetings were public, according to Murawski, representatives from Halliburton would attend these meetings, then meet privately with legislative and regulatory leaders within the state to express concerns over certain developments. This is a common complaint among journalists and environmental advocates across the state, though members of the MEC balked at the characterization that any company, individual or legislative body would influence the workings of the commission.

What may be more interesting here is not whether or not there was undue influence on the MEC, but what Theresa Vick, of the Blue Ridge Environmental Defense League, called the "sinister appearance of its dealing with Halliburton" (personal communication, 2016, January 7). John Murawski highlights the concerns of some of the stakeholders in the debate:

> People who were close to the Mining and Energy Commission process…various people, I don't want to identify them…because it was, the Halliburton meetings were taking place between the Halliburton people and DENR, the Department of Environmental and Natural Resources, now DECQ. So they would just have regular strategy, they would just have regular business meetings, and they would try to get, so they would have, you know they were just on a parallel track trying to develop policy, and DENR was trying to develop its positions, and they were bringing in people to give them advice and it was a private consultation, but it was bleeding over into the public process of the Mining and Energy Commission. And some of the Mining and Energy Commission Commissioners were frustrated because they felt like DENR was taking a parallel track, developing policy on a separate track. (personal communication, October 28, 2015).

Theresa Vick attended every MEC meeting and echoed the same sentiment:

> Bo Heath…He was a lawyer for Halliburton. He would express Halliburton's input to DENR, you know, he would do it privately, so it was never in a public meeting…he would attend the MEC meeting and he would sit in the back and never say anything. Then he would go to DENR and privately express his concerns, but he would not do it publicly. So it was like a parallel track. There were people on the Mining and Energy Commission that were concerned about it, too. (personal communication, January 7, 2016).

Just how influential were these meetings? John Murawski wrote about the issue in articles that appeared in the *Charlotte Observer* and *Raleigh News & Observer*. According to James Womack, the chair of the MEC, "No company stops what this commission is doing…And no individual in the legislative body does, either" (Murawski, 2013, May 4). However, he also "had been involved in private discussions with Halliburton officials, and [was] confident the commission [could] deal with the company's concerns without compromising public safety" (Murawski, 2013, May 4). While the closed-door meetings could indicate a lack of media influence in the policymaking process, the mere fact of writing the story could indicate that Murawski fulfilled the role the media should play in such a debate.

While the time, effort, and expense focused on lobbying (and other forms of direct relationship building) may make it seem as though media are irrelevant, it is for exactly these reasons that the role of media in policymaking is becoming more, not less, important. First, the debates and negotiations at meetings or regulatory bodies such as MEC and DENR are often not reported on by mainstream media. However, they are public proceedings, and thus they do not reflect the totality of the debate over policy issues. As Robert M. Ciesielski, chair of the Niagara Group of Sierra Club, Atlantic Chapter, pointed out "the media have an obligation to investigate and present an accurate picture" of the fracking debate in light of the "unbelievable amounts on lobbying, political contributions, advertising and the dissemination of misleading information"

put out by energy companies (personal communication, March 21, 2015). While Roger Downs, conservation director for the Sierra Club Atlantic Chapter, noted that while New York may have won the fracking debate "year after year we've watched key legislative priorities die in Albany because of the millions of dollars in industry lobbying expenses and campaign contributions that insulate [them] from doing the right thing" (personal communication, January 31, 2016).

This view that the investigative role of the media is important in the policy process should be concerning, given the current economic climate for news organizations. This is particularly true for newspapers, which have seen a trend from locally owned newspapers with enough resources and staff to newspapers with slashed staff owned by large media conglomerates (Schudson, 2011). As media organizations are constantly under pressure to do more with less, we have seen a decrease in the number of reporters dedicated to environmental issues (Friedman, 2015). Additionally, as reporters at media organizations are increasingly trying to create media content with less time and less resources, they are becoming more and more dependent on their sources, particular government sources, especially for environmental issues (Friedman, 2015).

(Dis)trust of the media.

While the actors within the fracking policy subsystems indicated that media do (and should) play a role in the policy process, I also found a certain level of distrust in the media. While respondents often cited the media as a source of information, they just as quickly denounced the media, as this self-described landowner conservationist stated:

> If folks would come and sit down and listen to these [public meetings] that are taking place in Raleigh, they would be shocked…they would absolutely be shocked. Because you would think, you know, for the press that this is a majorly pro-natural gas, pro-hydraulic fracturing commission. And I am here to tell you: that is not the truth…So it's frustrating when the media would think…I mean they're not there…the only media person that's there is John Murawski, and he's

> the only one that's taking the time to actually do the research. All the others…they're getting information from a very few environmentalists that they are just perpetuating lies. Lies. And it's sincerely frustrating because they're not taking the time to do their research. And you know it sells time, I guess. It's a little frustrating because they're not doing their job. (personal communication)

Claims of distrust of the media often came from the same interviewees who previously said they turned to the media for their information. A tenuous relationship with trust and the media was also found in New York. As Susan Zimet, director of Frack Action New York, said:

> Stories that the media tells, if you ask, you probably know more about this than I do, but it's one of those things if you ask people do you believe what you read in the newspapers they say no and then you ask them a fact that was covered in the newspaper or something that was covered in the newspaper and they believe it…I've been pretty discouraged with the media coverage of all of this. NPR I think has been horrible, I stopped giving them my money. I think for a while Ian Revina of the *New York Times* was doing some really good coverage but he has stopped and another woman on their staff, Nia Navarro, has done little. But I've been, I've been discouraged by what I see in the media. (personal communication, January 10, 2016)

Motives of members of the media were also simultaneously praised and questioned, such as here with Dennis Harkawik, an environmental lawyer in Buffalo, New York:

> But I really think the media is one that really needs to be looked into…you know, true journalism. I've met a few journalists that are actually unbiased. They just want the information like we do. But when we turn on our TV it seems the news is drawn to certain groups that seem to get more attention. You don't hear the second side. There's nothing to back up the information and I've seen it happen - you call the reporter, the reporter interviews you, you tell him whatever you want to tell him and they go back and it's on news and that persons is talking. People believe it! And that's the freedom of speech, which is good…But when the media ignores one side and listens to another, it creates hysteria. But people watch it, it's a train wreck and they want to see it. (personal communication, January 11, 2016)

This theme of simultaneous trust and distrust of the media adds another layer of complication to an already complex understanding of the media within the policy process.

Often, as evidenced in the quotes above, respondents pointed to the roles of the media as disseminating information, providing background for the public, and serving as a watchdog of the legislative process. This aligns with the traditional views of journalists themselves (Weaver, et al., 2009). It was when respondents felt that the media weren't fulfilling these roles, or that that were being "hoodwinked" by their sources, that the distrust came through. Additionally, distrust came through most often when respondents discussed the media as a monolithic entity, while they discussed individual reporters or media outlets in more positive turns. For example, in North Carolina, John Murawski, who wrote the bulk of the coverage for the *Raleigh News & Observer,* was mentioned by several respondents as providing good information. Murawski became knowledgeable on the subject and was able to devote his time and resources to the MEC, DENR, and the development of fracking legislation.

Use of media by policy subsystem actors.

Another running theme on the role of the media that appeared throughout the interviews in both North Carolina and New York is the use of the media as part of the strategic communication of other actors within the policy subsystem. Fracking quickly became a symbol on many different levels, a sentiment that carried over into media coverage. According to Murawski, fracking pretty quickly "took on significance for people that went beyond the actual benefits and risks, the amount of time spent on it, the amount of energy people put into it, the amount of rhetoric spent on it, I think transcended the actual benefits and risks." The media certainly played a role in this development of fracking as a symbol, from the framing of the fracking debate as a conflict between environmental protection and economic development, to

the attention paid to the flaming faucets, to symbolic actions taken by actors specifically for media attention.

In fact, the Common Council in Buffalo passed a moratorium on fracking even though Buffalo did not sit on a known natural gas shale and had no plans to explore for natural gas in the area had been announced. It was almost the opposite of North Carolina fast-tracking fracking legislation even as studies showed there was little gas available and the demand for natural gas within the energy market waned. Dennis P. Harkawik, an environmental lawyer, wondered why the Council would take up the issue when no one has proposed hydraulic fracturing in Buffalo, stating, "Doesn't the city council have better things to do?" (personal communication, January 11, 2016). However Joseph Golombek Jr., the councilmember who sponsored the bill, saw it as a symbol of leadership for Buffalo, "a catalyst for the bans that followed" (personal communication, January 11, 2016). This type of action garnered a lot of media coverage across the state. Regardless of what political pundits or media critics think, the actors within the policy subsystem obviously viewed the media as important.

Discussion and Conclusion

Both policy and media scholars link media and public opinion, noting that media coverage forces elected officials to pay attention to certain issues, as well as to certain aspects of certain issues, either expanding or constraining policy development (Herbst, 1998; Wolfe et al., 2013). The media can also serve as resource for policy entrepreneurs, who use the media to transmit their issue definition in order to mobilize groups and citizens to achieve policy success (Baumgartner & Jones, 2010; Shanahan et al., 2011; Nisbet & Huge, 2006). Other scholars have noted that the media can be actors themselves within the policy process (Druckman, 2005; Druckman & Parkin, 2006). Ultimately though, while the assumption is that the media are

important to the policy process, their role has never been fully conceptualized by policy researchers (see Crow, 2010)**.** Additionally, a growing body of media criticism has begun to question whether the media even matter at all, given the influence of other factors (see Wolfe et al., 2013).

The development and empirical tests of the ACF have shown the dual roles of the media as both actor and resource makes them difficult to conceptualize within policy (Shanahan et al. 2011; Sotirov & Memmler, 2012; Heikkila, 2014). This study shows that media are a multi-faceted component of a public debate on a policy issue like fracking. Media can act as conduits of information, as actors contributing to the policy process, as trustworthy or untrustworthy sources of information, as relevant or irrelevant actors, or as orienting factors.

Media can encompass news media (which can include hard news, soft news, and opinion pieces. It can also include documentaries such as *Gasland* or the industries responsive documentary *FrackNation*. What is increasingly clear is that while media are important actors within policy subsystems, they should be treated in a different manner than actors such as government, regulatory, advocacy, or even research-oriented actors. Additionally, the role of the media is not static, but may change both spatially and temporally. In the case of the fracking debates in North Carolina and New York, traditional hard news served as a conduit, while opinion pieces and non-traditional media such as documentaries served as contributor. The exception, particularly in New York though to a lesser extent in North Carolina, were investigative pieces done by *ProPublica*, the *New York Times*, the *Philadelphia Inquirer*, and the *Raleigh News & Observer*.

Media and public opinion.

One sharp departure from the previous literature (i.e. Herbst, 1998) for this study was a decoupling of media from public opinion. While many of the actors saw media as a mobilizing force for interested publics, a connection between media and public opinion did not seem as strong as past research may indicate. One obvious reason for this is the increased ability for direct communication among actors and their publics. Additionally, strategic communication best practices have moved away from a monolithic "Public" to focus on communication strategies directed at multiple invested publics, and media also have become more targeted. Additionally, both of these states also have regularly conducted statewide public opinion polls that featured fracking regularly.[5] Rather than media influence on public opinion, it is the media's ability to mobilize interested publics that is of most concern to policy subsystem actors.

Trustworthy or not, the media are still a source of information.

Previous research has shown that the media are a source of information for the public on environmental issues (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007). While the actors within the fracking policy subsystems in North Carolina and New York may exhibit a healthy skepticism about the role of the media, it cannot be denied that they still turn to the media as a source of information. This is especially true when a policy issue first emerges onto the media and public agendas, as happened with fracking in North Carolina. Many of the actors in North Carolina had little to no knowledge of fracking when it first emerged on the policy, public, and media agendas. Media, along with information put out by interest groups and government agencies, were important sources of information on fracking itself.

[5] The Elon University Poll in North Carolina, https://www.elon.edu/e-web/elonpoll/default.xhtml and the Quinnipiac University Poll in New York, https://www.qu.edu/news-and-events/quinnipiac-university-poll/. Previous research has indicated that the lack of ability for public opinion polls at the state level accounted for some of the conflagration of media and public opinion (Herbst, 1998).

Media also serve as sources of information for actors within a policy subsystem to track the actions of other actors. Local activists and policymakers often used media to track the activities at the statehouse, while officials not intimately involved in the policymaking process but still a part of the policy subsystem relied on media in the absence of other regulatory and legislative communication. This indicates that while media may not have a direct influence on policy, they can indirectly influence the policy subsystem by shaping the views of many of its actors.

Role of the media in the policy process.

The availability of and access to more and more information, rather than making media obsolete (Wolfe et al., 2013), has led to a shifting role for media in policy debates. Increasingly, we are turning to media to make sense of the information we receive, to help determine which sources of information are credible, and to analyze and synthesize the vast amounts of information that exist around one policy issue. The majority of policy subsystems operate with little public interest or influence, with the vast amount of policy decisions made without media coverage. However, we still rely on media to alert us when truly important—or seemingly improper—decisions that warrant public input are being made within a policy subsystem. In an extension of this role, actors within the fracking policy subsystems in North Carolina and New York held an expectation of the role of the media to elevate the watchdog role of the press, as well as investigate perceived injustices.

In both North Carolina and New York, it seemed as though media had more direct influence on legislators at the local level, while influence on legislators at the state level came from their city and county legislative colleagues; industry, community, and environmental advocates; and factors outside of the policy subsystem such as the price of natural gas. Most

tellingly, strategic stakeholders in the debate viewed media as important and shaped their advocacy activities around media outreach.

Media are part of a confluence of factors that influence the policy debates, and their influence and role are dependent on the level of policy knowledge and policy learning of the actors within the policy subsystem. The role of the media is also dependent on the phase of the policy process. It is dependent on external factors such as the economy. It is dependent on the sociological factors of the community within which it operates. What is clear though, is that the media do matter, they may just matter in ways that are different from the way researchers conceptualize them, and the way they matter within the policy process is constantly shifting. Media play a multi-faceted role in the policy process, and any model incorporating the media must account for this. The ACF needs to identify media as political actors that are different from the other actors within the policy process, an investigative actor tasked with monitoring government actions, a source of information and background on an issue, a resource for political actors to establish their policy narratives, and a means for political actors to monitor the strategic actions of their counterparts in the policy debate.

Chapter 4 – Coalition Strength and the Control of Information: The Role of Strategic Communication in the Fracking Policy Debates

In May 2012, the North Carolina Department of Environment and Natural Resources submitted its final report to the General Assembly stating that fracking could be done safely (Murawski, 2012, June 1). The report set off a firestorm of media coverage, public relations campaigns and public outreach events as actors vied to define fracking as either a terrible process that will wreak havoc on the environment and community health or a saving grace that will bring money and energy independence to the state. Environmental and community advocacy organizations such as the North Carolina chapters of the Sierra Club, Environment, and Food and Water Watch quickly lined up on the anti-fracking side of the debate, while companies like Halliburton and industry groups like the North Carolina chapter of the American Petroleum Institute (API) were on the pro-fracking side.

As the anti-fracking and pro-fracking coalitions sought to frame the issue, they employed strategic communication tactics to influence their preferred policy solution. Environmental groups gathered together in a broad-based coalition, Frack Free NC, that implemented a media advocacy campaign, attended public meetings, protested outside the state legislature, held public events, and reached out to organization members and others through social media campaigns (Murawski article, Sierra Club interview). The API funded the North Carolina Energy Coalition, which attended public meetings and implemented a media relations campaign, but (along with Halliburton), focused its energy and resources on leveraging relationships with Republican lawmakers and regulatory officials with ties to the energy industry (Coleman, 2014, May 28).

North Carolina would go on to pass legislation to fast-track fracking in the state in May 2014, finalizing rules and allowing fracking in March 2015. However, fracking is still under attack in the state, as members of the anti-fracking coalition challenge the validity of the rulemaking process and encourage local bans on fracking (Jones & Blunt, 2016, January 29).

Around that same time in New York, Gov. Andrew Cuomo extended the deadline for determining whether fracking would be allowed in New York, a move that stunned most actors within the policy subsystem there because they had felt that fracking was almost guaranteed to be allowed. As New York was further along in the policy process, its anti- and pro-fracking coalitions had already been formed. The anti-fracking coalition, New Yorkers Against Fracking, praised Cuomo for his actions through media outreach and a major public event held outside the State of the State address site (Times Union article). Pro-fracking coalitions, such as the Joint Landowners Coalition of New York (JLNCY), questioned Cuomo's motives and challenged scientific reports that fracking would adversely affect the environment and public health of communities sitting on the Marcellus shale (personal communication). Gov. Cuomo would go on to officially ban fracking in the state in December 2014 (Nearing, 2014, December 18)

Previous research into the role of media in the policy process has indicated that media can be both a contributor to the debate and a conduit of information about the debate (Sabatier, 2011; Jenkins-Smith et al, 2014). Here I focus on how coalition members within a policy subsystem incorporate media into their strategic communication plans. In this case, it is the ability to control information that is at the heart of examining the role of the media in the policy process:

> Information, in short, can be used too as a source of power. Those who are enabled to use information…by their positions or capabilities, and who are rendered willing by their motivations, are, in our contemporary, media-centered society, the ones most favored. Those without the ability, opportunity, or drive to

> control information *as a political resource* are the disadvantaged. (Manheim, 1991, p. 5).

The Advocacy Coalition Framework (ACF) provides a framework for examining the actions of advocacy groups within a policy debate, particularly as they build coalitions with like-minded organizations and implement strategic communication plans to frame a policy issue. To understand the role of these advocacy groups and coalitions, I examine the relationship among the advocacy actors within New York and North Carolina, how they formed their coalitions, the core beliefs for each coalition, and how each coalition disseminated its messages related to these core beliefs.

In the previous two chapters, I outlined how my model explores the politicization of scientific and technical information within the ACF, as well as the media's role in framing, interpreting, and analyzing public debate around policy issues. In this chapter I focus on the strategic communication strategies of the actors within the debate, particularly coalition building and issues management. Through the lens of the ACF, I will explore how both the pro- and anti-fracking coalitions formed and their issues management strategies for developing their policy images for fracking.

Literature Review

The Advocacy Coalition Framework (ACF) and strategic communication.

A broad definition of public policy includes formal decisions, laws, and regulations, as well as the underlying mechanisms that govern the policy process. Policy researchers study "the interactions over time between public policy and its surrounding actors, events, and contexts, as well as the policy or policies' outcomes" (Weible, 2014, p. 14). The ACF is particularly useful for studying environmental policy debates. In fact, from 1987 to 2013, environmental policy

issues account for more than half of all empirical applications of the ACF (Jenkins-Smith et al., 2014).

Researchers implementing the ACF seek to explain empirically the dynamic process of policy change by focusing on policy subsystems and their coalitions (Shanahan et al., 2011). Policy subsystems are the community of actors that coalesce around a particular issue that often operate outside of the public eye, especially for policy issues with strong scientific and technical components (Baumgartner & Jones, 2010). According to the ACF, actors within these coalitions who share core beliefs about a particular issue and coordinate their actions around that issue can be grouped into coalitions (Jenkins-Smith et al., 2014). While coalitions in the ACF can vary in their level of resources, formality, and size, the coalitions in the fracking debate (anti-fracking or pro-fracking) in New York and North Carolina were relatively well-formed and official, especially on the anti-fracking side. Coalitions have been one major theoretical focus of the ACF, with policy learning, which refers to the shifting of beliefs among coalition members, and policy change, which refers to alterations to a policy that deviate from a previous policy, comprising two more major theoretical foci (Jenkins-Smith et al., 2014).

Heikkila et al. (2014) in their study of hydraulic fracturing disclosure policy in Colorado, point out that policy learning and policy change can be the focus of strategies of interest groups within a subsystem:

> In addition to studying how policy actors coalesce around beliefs within interest groups and whether those beliefs change, it is beneficial to explore the strategies of interest groups in trying to understand a period of policy change. Generally, strategies differ from policy beliefs in that they refer to the actions taken by policy actors or interest groups to achieve policy goals supporting their beliefs (Rokeach, 1973). In other words, strategies are the means by which interest groups seek to achieve their objectives, policy beliefs. Therefore, the types of strategies that interest groups employ can help illuminate how policy actors achieve their political objectives in a policy process. (pp. 67-68)

While the ACF assumes that the strategies employed by interest groups are varied, strategic communication plays a large role (Weible et al., 2009; Allen, 2015). Learning consists of "communication or exposure to new information, perhaps from an event or negotiation…when policy actors…alter their beliefs [and] come together on new understandings of policy problems and solutions" (Heikkila et al., 2014, pp. 70; 79-80). In the absence of policy-oriented learning, negotiated agreements can lead to policy change through "consensus-based decision rules, experienced leaders, adequate funding, face-to-face communication and trust, commitment to the process by all parties, adequate representation of stakeholder interests, and political recognition of the process" (Heikkila, et al., pp. 60; 78-79.)

Jenkins-Smith et al. (2014) point out that while coalition membership and beliefs have been examined through the ACF, coalition resources have long been understudied. However, recent applications of the ACF have examined coalition resources and stakeholder actions within a policy debate (Albright, 2011; Ingold, 2011; Heikkila et al., 2014). For example, in their examination of a change in hydraulic fracturing disclosure policy in Colorado, Heikkila et al. (2014) examined the framing strategies of interest groups, particularly in the development of policy narratives. The authors found that environmental advocacy groups were more likely than industry to employ narrative strategies, particularly in casting their opponents as villains. Heikkila et al. (2014) also showed that a mixed-method case study approach incorporating content analysis of media coverage and interviews with stakeholders provided rich data, while analyzing that data through multiple theoretical lenses provided a richer understanding of the policy process.

Therefore, in this study I employ a mixed-method, case-study approach to examine the strategic communication of non-governmental actors (such as environmental or industry

advocates) within the ACF to better understand the pro- and anti-fracking coalitions in North Carolina and New York and their strategic communication strategies. I draw on the social movements literature focused on coalition building in sociology to better understand the formation of the coalitions. Next I explore how major organizational actors within the coalitions mobilized their publics using issues management research from public relations. Finally, I bring these literatures into conversation with the journalism literature to explore the role of media and scientific evidence using public relations and communication research.

Advocacy and activism within the public relations literature.

According to Taylor and Das (2010), there is an increased focus within the public relations literature on the strategic communication efforts of advocacy organizations and social movements. The conceptualization of activism and advocacy organizations has become more nuanced over the past few years (Taylor and Das, 2010), as public relations literature has moved toward a civil society view of PR (Taylor and Kent, 2010). The public relations efforts of advocacy organizations to manage issues include coalition building and issues management through information subsidies (Taylor and Das, 2010; Hallahan, 2001; Sommerfeldt 2013)

For smaller organizations especially, coalition building can help them in their agenda building efforts, especially if they can directly solicit a group with resources that may be aware of the issue they are fighting for and share similar enough goals that they can promote their own goals by forming a coalition (Hallahan, 2001; Sommerfeldt, 2013; Chavez, 2011; Jacobs & Glass, 2002). According to the public relations literature, the best way to manage an issue is through relationships and collaborations with groups and organizations that have aligned interests (Heath & Palenchar, 2009). According to both the ACF and the social movement literature, coalitions are formed when organizations with at least some common goals or interests

come together on a particular issue or issues (van Dyke & McCammon, 2010; Jenkins-Smith et al., 2014; Snow & Soule, 2010). They can range in the number of groups involved, the formality of the coalition, the kinds of organizations, the resources provided, and the issue(s) addressed by the coalitions (van Dyke & McCammon, 2010; Jenkins-Smith et al., 2014; Snow & Soule, 2010). Strategic communication efforts can engage publics through coalition building by highlighting how coalition members can advance their own goals by promoting interests of others (Hallahan, 2001). The ACF hypothesizes that the beliefs of the stronger coalition will be more likely to be incorporated into policies and programs (Jenkins-Smith, 2014).

Issues management.

Issues management refers to the strategic involvement of organizations in public policy matters (Heath & Palenchar, 2009; Taylor and Das, 2010; Veil & Kent, 2008). The best way to manage an issue is through relationships and collaborations with groups and organizations that have aligned interests (Heath & Palenchar, 2009). This makes issues management particularly well suited for studying the way advocacy coalitions developed the fracking policy image within the ACF. While issues management developed as way for business to respond to issues involving impending regulation and public distrust of corporations (Kent, et al., 2011), it can also be applied to advocacy organizations (Taylor & Das, 2010). This is particularly true for large, well-funded organizations such as the American Petroleum Institute or the Sierra Club, can and do engage in issues management.

Issues are activated when an inactive public becomes aware of an issue. However, management of the issue will only be necessary if that public then becomes aroused to seek information, and if that information spurs the public to become active, organizing and seeking solutions. It is this last step that can lead to coalition-building and agenda-building efforts such

as media advocacy and lobbying (Hallahan, 2001). Organizations have many different management methods for responding to their publics at all phases of the issue activation process (Hallahan, 2001). For inactive publics, who have low knowledge and engagement on an issue, organizations can engage in preventative measures to prevent a public from becoming active (Hallahan, 2001). For aware publics, who may have knowledge of the issue but little engagement, organizations can use intervention measures to keep them from becoming engaged (Hallahan, 2001). For aroused publics, who may have little knowledge of the subject but be very engaged, organizations can educate the public on the issue (Hallahan, 2001). While traditionally issues management has assumed that active publics are the desired outcome, recent scholarship has indicated that inactive publics can be just as important to issues management (Kent & Veil, 2008). Critics of issues management have pointed to the fact that it can erode journalists' independence while also contributing to the spread of misinformation, both intentional and not (Williams, 2015; Williams and Gajevic 2013; Oreskes & Conway, 2011). This is especially true given concerns about economic pressures and resources of journalism (see Friedman, 2015).

Media advocacy and framing.

In addition to coalition building, one of the main strategies to manage issues for organizations, especially advocacy organizations, is information subsidies (Taylor & Das, 2010). Media can be an important part of agenda building and coalition building for activist organizations because they can use the media to gain legitimacy with the public and policymakers (Sobieraj, 2011; Jacobs & Townsley, 2011). Media are important especially in environmental debates, as they are still a major source of information for the public on environmental issues (Friedman, 2015; Riffe & Reimold, 2008; Riffe et al., 2007).

In a policy debate, stakeholders seek to frame an issue to persuade their publics that their policy solutions are appropriate (Heikkila et al., 2014). Advocacy groups' main strategy for framing an issue is the use of information subsidies, or the ways in which organizations present information to media to lower the cost of newsgathering (Gandy, 1982; Taylor & Das, 2010). Because news frames can play a large part in the development of a policy image and policy narrative, strategic communicators will often look for opportunities to shape media frames, often operating as "'frame strategists' (Hallahan, 1999, p. 224) who try to position news to result in good outcomes for clients" (Darmon, 2008, p. 374-375). Public relations as an issues management function is a process grounded in rhetoric, where public relations should help actors fulfill the requirements of a fully functioning society (Taylor, 2009, 2011). Each group of actors within a policy subsystem has their role(s), and it is the relationships and communication among the actors (the public relations, agenda building, and coalition building efforts) that help move the policy process forward, particularly the actions of policy entrepreneurs (Jenkins-Smith, 2014).

Research Questions

I began this study with two broad questions related to the role of strategic communication in the policy process. The first looks at the actors who formed the pro- and anti-fracking coalitions and their core beliefs.

RQ1: *Who participated in the pro- and anti-fracking coalitions in the public debate of fracking in New York and North Carolina?*

RQ1A: *What were the core beliefs of the pro- and anti- coalitions?*

The second looks at strategic communication strategies employed by those actors:

RQ2: *How did the anti- and pro-fracking coalitions within the fracking policy subsystems in New York and North Carolina develop a policy image through strategic communication?*

RQ2A: *How were the pro- and anti- coalition messages reflected in public debate of fracking in New York and North Carolina?*

To best answer these questions, I implemented a multi-method approach, incorporating both quantitative and qualitative content analysis, fieldwork, and interviews with actors in the fracking policy subsystems in New York and North Carolina.

Method

I combined content analysis of media coverage of fracking with interviews of journalists, policymakers, and stakeholder representatives involved in the debate. This is similar to Williams & Gajevic's (2013) approach to studying the effectiveness of advocacy campaigns in the animal-human hybrid embryo debate in the UK. I also incorporated participant observation at public meetings and events focused on fracking. I began with the quantitative content analysis of the media coverage because of its importance to advocacy organizations and in scientific debates generally (Sobieraj, 2011; Cook, 1998; Dunwoody, 2015). I chose a qualitative empirical method to complement my content analysis because qualitative research is useful to "develop insights about underlying forms and dynamics of the phenomenon under study…qualitative researchers attach meaning, rather than measurement, to the phenomena observed" (Silbey, 2014, p. 287).

To answer ***RQ1***, I first determined the actors participating in the public debate. This included a quantitative content analysis of the type of sources most often quoted in media coverage of fracking in each state. For the purposes of analysis, I developed the following seven *source categories* combined from the initial list of ten:

- Elected Officials – included subgroups elected officials and candidates.
- Agency Officials - regulatory agency representatives.
- Environmental and Community Advocates – included subgroups representatives of environmental and community advocacy groups.
- Industry Representatives– mining and energy company representatives and industry advocates.
- Academics – academics and scientists for universities and independent research entities
- Citizens – included subgroups citizens and landowners in each state.
- Media – columnists and editorial boards, any journalist offering an opinion versus just reporting on the story.

This list was developed based on my knowledge of the fracking debate. I also employed qualitative content analysis of the media coverage, fieldwork, and interviews to explore the individuals and organizations on both sides of the debate, as well as a list of thirteen assertions that were made about fracking:

- Need to protect the environment– such as water contamination or air pollution from fracking operations.
- Need to protect public health – if human/public health effects are mentioned.
- Need to contribute to the economy – such as focusing on the economic benefits of fracking for the community and/or the state.
- Need for energy independence – points to fracking as a means to energy independence, fracking as a "bridge" in US energy policy, fracking as a better energy alternative.

- Quality of life issues – such as highlighting the stress of fracking operations on communities or effects of fracking that go beyond simple environmental effects or economic benefits.
- Questioning the science of fracking – such as questioning the amount of natural gas recovered by fracking, or whether the costs outweigh the benefits, or noting deficiencies in studies showing fracking is safe.
- Questioning the science of environmental effects – such as noting deficiencies in studies showing fracking degrades environment, benefits outweigh costs, etc.
- Administration of fracking rules and regulations – looking at the rules of fracking, including the ability of the state to regulate fracking.
- Fracking is safe - general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking.
- Fracking is unsafe – general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking.
- Fracking as a moral issue – such as calling fracking unethical or immoral, questioning the morality or ethics of energy companies, government, or environmentalists.
- Need for precaution – such as invoking the need to proceed carefully or do more study in light of uncertainties related to fracking and/or environmental research.
- A call for working together – calling on "both sides" (i.e. Democrats and Republicans, Government and Industry, Environmentalists and Industry and/or government) to work together for the good of the community and/or state.

- Distrust of the other side – questioning the actions or motivations of their opponents; also questioning if the other side knows what they are doing; also mentions of not knowing what's in in fracking fluid.

Through this qualitative work, I determined the core beliefs of the pro- and anti-fracking coalitions in each state. Overall, the general themes from the pro- and anti-fracking coalition members were the same across both states. Table 4.1 outlines the major themes for the pro- and anti-fracking coalitions, as well as a set of assertions that were invoked by both sides.

Table 4.1 Pro, Anti, and Dual Messages Asserted by Media Sources

Pro-Fracking Coalition Messages	**Anti-Fracking Coalition Messages**	**Messages Used by Both Sides**
Need to contribute to the economy Need for energy Questioning environmental science Fracking is safe	Ned to protect the environment Need to protect public health Questioning fracking science Fracking is unsafe	Quality of life issues Administration of fracking rules Fracking as a moral issue Need for precaution Call for working together Distrust of the Other Side

For the pro-fracking coalitions, these were statements focused on the economic development benefits from fracking, the energy benefits from fracking, declarations that fracking is safe, and statements questioning the science of anti-fracking research. For the anti-fracking coalitions, these were statements focused on concerns of fracking effects on the environment, public health issues, declarations that fracking is unsafe, and statements questioning the technology itself.

To answer ***RQ2***, I combined interviews with stakeholders and field observations to determine how the coalitions develop a fracking policy image though strategic communication. In reporting these results, I used names when public statements were made and as a default for interviews, but respondents were allowed to request pseudonyms. Interviews in New York included Susan Zimet of the environmental advocacy group Frack Action; Woody Stens, a

director with the Keuka Lake Association (an area that would be affected by fracking); a municipal elected official in the Southern Tier of New York (the area that would be affected by fracking); a county environmental health director; and a member of the Joint Landowners of Central New York. Interviews in North Carolina include Nick Brown, chair of the Capital Group of the Sierra Club North Carolina Chapter who works closely with state level staff on outreach efforts; Theresa Vick of Environment North Carolina; Darryl Moss, mayor of Creedmoor, NC; and a county environmental health director.

Additionally, to assess the efficacy of the media messages in public debate, as part of my quantitative content analysis I analyzed which coalition messages were used most often in the media coverage and by which sources

Findings

Past research has indicated that the strength of coalitions can be determined by the number of members, the coordination of their strategies, and the consistency of their message (Sabatier & Weible, 2007). However, my research shows that while this may be true a lot of the time, sometimes it's the close relationship with individuals with the political power to push a policy through that matters most. Additionally, at the end of the day, monetary resources may be more important than coalition resources and strategies. The sociology and public relations literature have shown that media advocacy and information subsidies are important hallmarks of issues management strategies for advocacy organizations (Sobieraj, 2011; Taylor & Das, 2010), and my findings show that this is indeed the case. However, it is worth noting that much of the sociology and public relations theory related to advocacy organizations assumes they are small and unfunded, yet many of the environmental organizations in this case study are part of national

organizations with vast resources, and many smaller local organizations have formed ongoing partnerships.

The makeup of sources in the public debate.

Given that media outreach is a major strategy for advocacy coalitions in their issues management activities (Taylor & Das, 2010), my initial assessment of the actors within the public debate around fracking included a quantitative content analysis of the sources used in the media coverage of the fracking debate. Figure 4.1 outlines the differences between North Carolina and New York in the sources used.

Figure 4.1 Types of Sources Quoted in Media in North Carolina and New York(%)

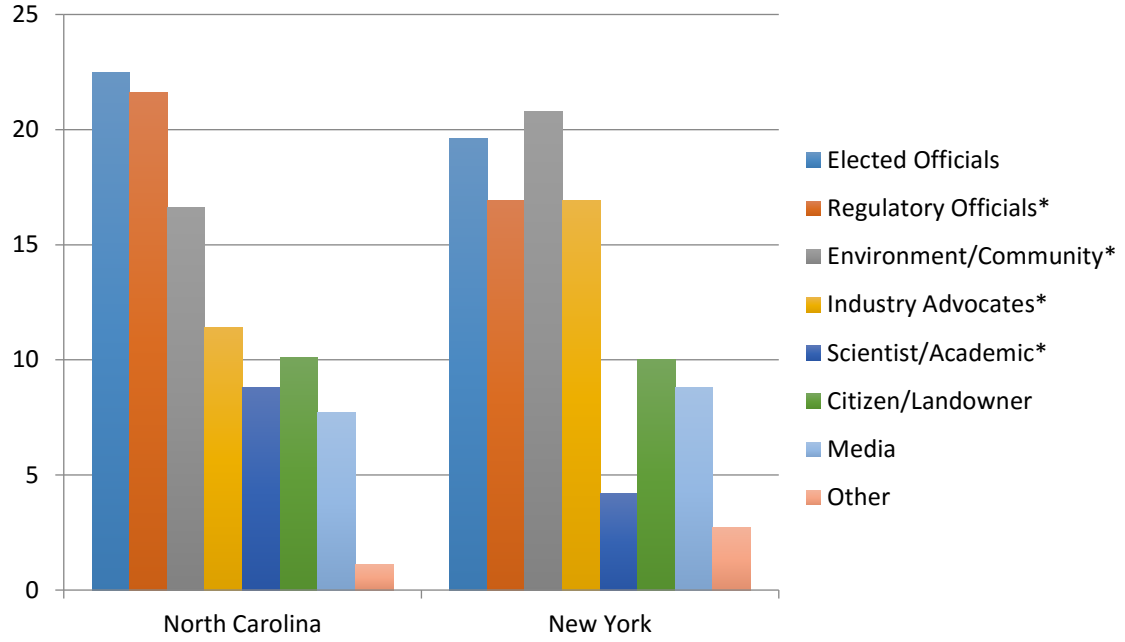


Figure 4.1. $X^2 = 84.72$, df = 7, $p < .00$, N = 3821. In North Carolina, elected officials were quoted most often (22.5%), followed by regulatory officials (21.6%) environmental/community advocates (16.6%), industry advocates (11.4%), citizen/landowners (10.1%), scientists (8.8%), and media (7.7%). In New York, environmental advocates were quoted most often (20.8%), followed by elected officials (19.6%), industry advocates (16.9%) and regulatory officials (16.9%), citizens/landowners (10.0%), media (8.8%), and scientists/academics (4.2%). *Percentages between states are significantly different at $p < .05$ by the difference in proportion test.

There were statistically significant differences between New York and North Carolina in the use of industry sources, environmental sources, regulatory officials, and scientists/academics.

The most notable difference between the sources used in the media coverage in each state is the difference in the presence of industry advocates. The larger presence in New York is most likely due to the Marcellus Shale and vast availability of shale gas. Part of the strategic political communication process is managing your resources, and industry was unlikely to focus a lot of time on media outreach in North Carolina, given the ease of access (both geographically and technically) in New York. Additionally, as recent work in the public relations literature has pointed out, sometimes inattention and an inactive public are preferable (Veil & Kent, 2008). Given the contentious nature of the fracking debate, the more "under the radar" the issue stayed in North Carolina, the better for industry.

Another notable difference in the sources used is the difference in academics/scientists, who were quoted in the North Carolina media coverage almost twice as much as New York. First, many of the preeminent studies into the health effects of fracking came from a group of Duke researchers. While research was being done in New York, these groups were not getting the national attention of the Duke researchers (Murawski, 2014, September 16). Additionally, there were concerns about the research being done at the New York universities, such as the Shale Institute at the University of Buffalo that shut down (McNeil, 2012, October 3). Even when this was a focus of a story, the sources were from outside of academia voicing their concerns about the research conducted there. This could indicate more of a trust in science in North Carolina, as well as a reliance on science in view of what was perceived as the ignoring of science by the Mining and Energy Commission (Editorial, 2014, August 13).

Elected officials and regulatory officials were the most quoted sources in North Carolina, as opposed to New York, where environmental and industry advocates were the most quoted. Based on this assessment, according to the coalition-building literature, we might then expect the anti-fracking coalitions in both New York and North Carolina to be stronger. We also might expect the government representatives to be more connected to the anti-fracking coalition in North Carolina than in New York, which should indicate that anti-fracking coalitions in both states would win the policy debate. However, we know that is not the case, since North Carolina fast-tracked its fracking legislation. According to the ACF, which posits that the stronger a coalition, the more likely its beliefs will be incorporated into policies and programs (Jenkins-Smith, 2014), we would expect the industry coalition to be the stronger coalition. However, that is not the case either.

The American Petroleum Institute sponsored the North Carolina Energy Coalition (NCEC), with membership comprised of state and national energy and business groups, including America's Natural Gas Alliance, the National Ocean Industries Association, N.C. Chamber of Commerce, National Federation of Independent Business North Carolina chapter, N.C. Farm Bureau, Carolinas Associated General Contractors, American Council of Engineering Companies of North Carolina, the N.C. State Grange, Carolina Business Coalition, Consumer Energy Alliance Southeast, N.C. Energy Forum, Energy in Depth, and the N.C. Hispanic Chamber of Commerce (Sturgis, 2014, September 18). The executive director of the NCEC was Alber Eckel, a partner at Eckel & Vaughan, a strategic communication and lobbying firm in Raleigh that had been involved in promoting offshore drilling in North Carolina. According to a case study by Eckel & Vaughan, API wanted to make energy a top issue for North Carolina voters in the run-up to the 2012 election. API had previously tried to do that through public

rallies, but its events had a limited reach and tended to attract audiences that already supported the group's agenda:

> The centerpiece of the campaign was the North Carolina Energy Forum Event Series. Instead of developing stand-alone rallies, we established a presence at existing family- friendly, non-political events around the state to reach a larger and more diverse coalition of voters. Voters were invited to spin the energy wheel, answer an energy trivia question, and join the Energy Forum. (Sturgis, 2014, September 18).

The NCEC represented industry interests in North Carolina, and it was most active during the summer of 2014, when the Mining and Energy Commission held its public meetings on the fracking regulations. Figure 4.2 is a screenshot of the North Carolina Energy Coalition website. The site is no longer active.

Figure 4.2 North Carolina Energy Coalition Website

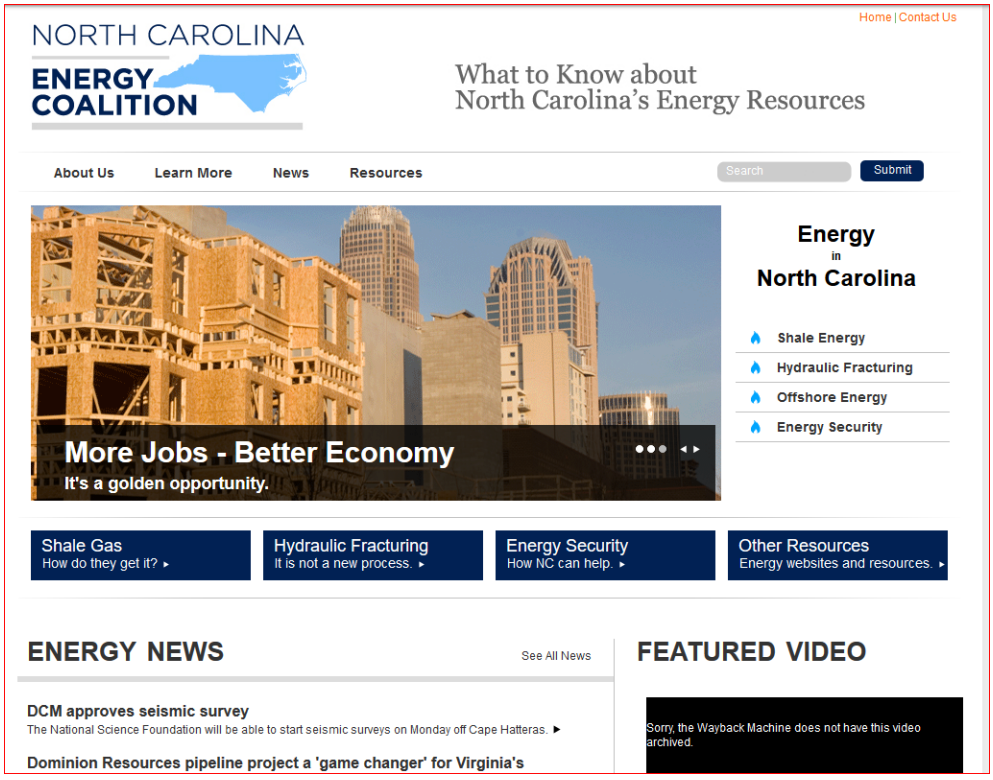


Figure 4.2. This is the front of the North Carolina Energy Coalition as of October 18, 2014. While the site is no longer active, it was accessed through the Internet Archive, https://web.archive.org/web/20141018114041/http://www.ncenergycoalition.com/about-us/nc-energy-coalition-partners.

The NCEC is what can be termed a "parachute coalition," funded by a national organization to mobilize publics around a local issue. These types of parachute coalitions are not uncommon in strategic communication practices, though the ethics of such coalitions are hotly debated among strategic communication professionals.

The API had strong ties to Senator Bob Rucho, the main sponsor for SB720, which fast-tracked fracking in North Carolina (Coleman, 2014, May 28). McGuireWoods, the firm charged with arranging meetings between industry representatives and the MEC as it was developing the rules, had also been a top political contributor to his campaigns (Coleman, 2014, July 19). These relationships formed prior to the origination of the fracking debate in North Carolina. While the NCEC never formed strong public ties with state and local organizations, and the local organizations did not maintain the actions of the NCEC, it is a classic example of issues management in which a national organization motivates a public around a particular local issue. The pro-fracking coalition had the support of the Republican Party in North Carolina, which meant its media outreach and strategic communication needs were not as great.

In comparison, the anti-fracking coalition in North Carolina is comprised of many different local and state actors. In North Carolina, Frack Free NC, a "network of grassroots organizations who believe that shale gas development using 'fracking' and horizontal drilling cannot be done without bringing harm to our waters, land, air, communities and public health," represented many state and local advocacy groups, according to their website. It was largely driven, at least initially, by Food and Water Watch, a national organization with a goal of banning fracking nationally. However, the organization formed partnerships with local groups and Frack Free NC has become self-sustaining, and it is still active today. Figure 4.3 shows the Frack Free NC website.

Figure 4.3 Frack Free NC Website

Figure 4.3. This is the Frack Free NC website accessed at www.frackfreenc.org. It is still active.

While the fracking legislation ultimate passed, the alliance is still active, shifting its focus to other strategies such as suing to delegitimize the makeup of the Mining and Energy Commission and thus invalidate the fracking rules and helping local city and county governments pass fracking moratoriums.[6] Frack Free NC regularly sponsors events, updates its website and communicates via social media.

The anti-fracking coalition in New York, New Yorkers Against Fracking, is comprised of "members from every part of the state and a diverse collection of consumer advocacy, health, religious, food, and environmental organizations and dozens of grassroots groups," according to their website. It also began with one main supporter, but grew into a more broad-based,

[6] Clean Water NC and Creedmoor Mayor Darryl Moss are two of the actors who have challenged the authority of the MEC. For a list of local ordinances banning fracking in North Carolina visit www.frackfreenc.org.

grassroots organization. New Yorkers Against Fracking, while its activity has decreased, is still active in the state, though its focus has shifted to issues such as natural gas pipelines (Zimet, personal communication, January 10, 2016). Figure 4.4 shows the New Yorkers Against Fracking website.

Figure 4.4 New Yorkers Against Fracking Website.

Figure 4.4. This is the New Yorkers Against Fracking website, accessed at www.nyagainstfracking.org. It has not been active since Governor Cuomo announced the ban in December 2014, though the coalitions social media accounts are still active.

The last event sponsored by New Yorkers Against Fracking was a rally to celebrate the fracking ban at the end of 2015. This was also the last time the website was updated, though its social media feeds remain active.

The pro-fracking coalition in New York was more disparate. The Joint Landowners Coalition of New York, an organization of "local business owners, farmers, and landowners in the Southern Tier…a true grassroots organization that is unaffiliated with the natural gas

industry" created "to foster, promote, advance and protect the common interest of the people as it pertains to natural gas development through education and best environmental practices." Figure 5.5 shows the JLCNY website.

Figure 4.5 Joint Landowners Coalition of New York Website

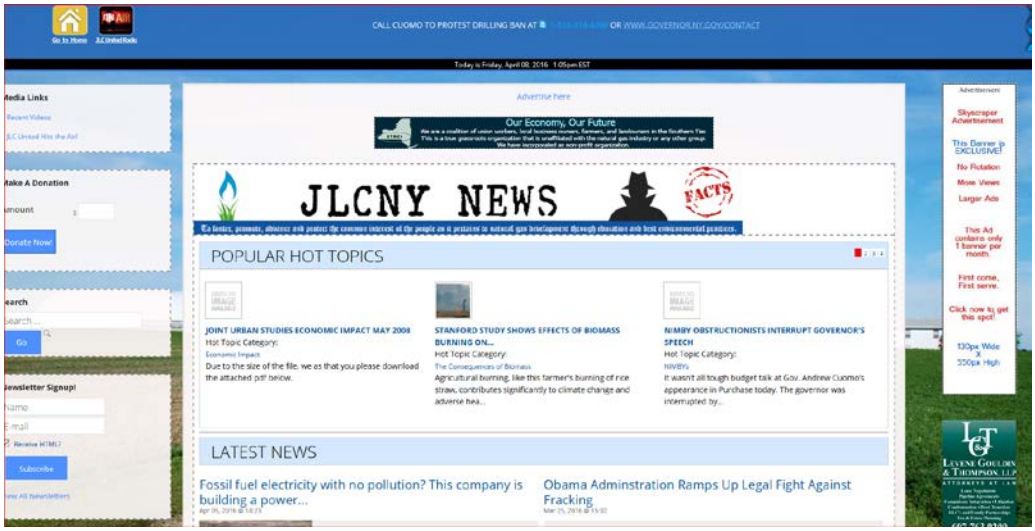


Figure 4.5. This is the Joint Landowners Coalition of New York website, accessed at www.jlcny.org. It is still active, though it does not provide a list of members and/or partners.

The energy companies in New York have their own coalition, Energy Coalition New York, focused on lobby efforts.

The anti-fracking coalitions in both North Carolina and New York were broad-based coalitions that were driven initially by actors involved nationally in the anti-fracking movement. Both coalitions remain active today, though the strategies and tactics have shifted since the policy changes in March (North Carolina) and December (New York) of 2015. By all measures of the ACF and coalition-building research—like strength in relationships among members, coordinated strategies, and consistent messaging—they should have been successful. However in North Carolina, the energy industry had strong ties to Republican legislators that pre-dated the fracking debate, and while the pro-fracking coalition was not broad based nor long lasting, it was well-funded. Conversely, the pro-fracking coalition in New York failed on all accounts.

Controlling information, controlling the message: Media and extramedia influences.

The public relations literature suggests that media are central to issues management for advocacy organizations (Taylor & Das, 2010; Sobieraj, 2011; Jacobs & Townsley, 2011). Many of the most active environmental advocacy groups in North Carolina were state chapters of larger national groups, such as the Sierra Club, Food & Water Watch, and Environment NC. These chapters often depended on their national organizations for resource and messaging support. The Sierra Club exemplifies this case. In the fracking debate, one might think of environmental advocates as David to the energy industry's Goliath. However, organizations such as the Sierra Club actually have in place a very sophisticated advocacy structure. According to Nick, the conservation chair for the Sierra Club, North Carolina Chapter, Capital Group, once a year the leadership of each of the 14 local groups in North Carolina meet to determine the major issues for the chapter for upcoming year.

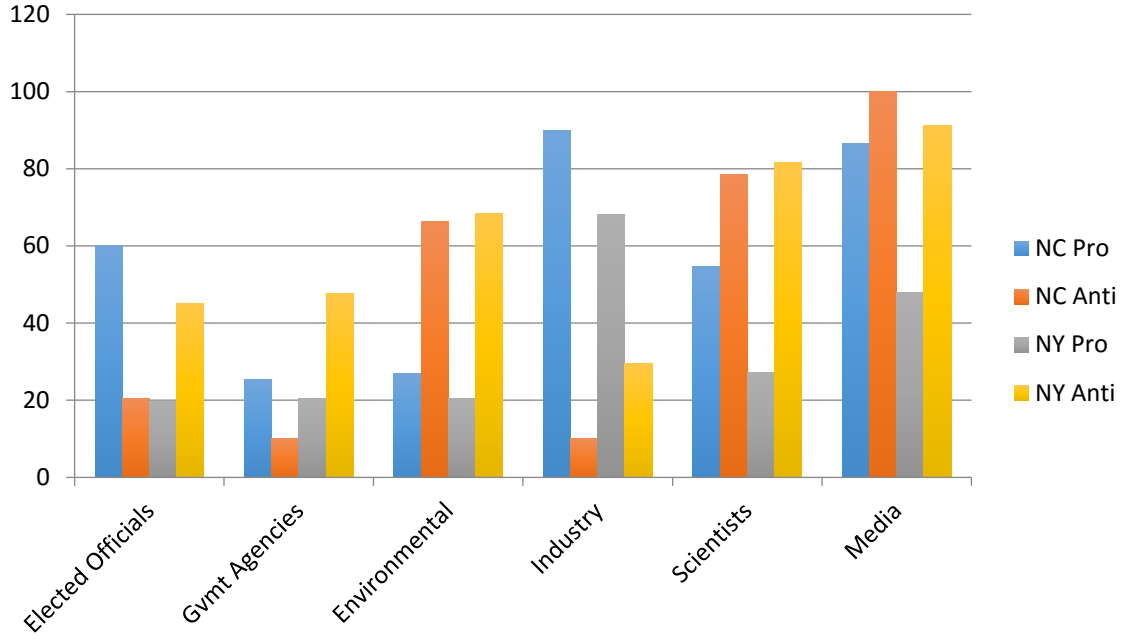
However, in my experience working with the Sierra Club, North Carolina Chapter and the Capital Group within it, they depend on the national organization for a lot of their information. For issues that are important nationally, the national organization holds webinars for state and local leadership offering scientific and technical background, talking points, and other information as needed. Within the states, the lobbying efforts are centered at the state level, which has a small paid staff. The local groups are made up of volunteers. They are responsible for the majority of the public outreach for the organization, though many of the volunteers have little to no experience in public outreach. For the most part, though, messaging and framing of the issue are similar at the local, state, and national levels. The national and state organizations developed talking points, drafted letters to the editor, and created outreach materials for use by volunteers across the state. Interestingly, while the Sierra Club North Carolina Chapter was

instrumental early in the fracking debate, by 2015 the organization had moved on to other issues. (Brown, personal communication, 2015, March 26).

The actors in both New York and North Carolina focused much of their strategic communication efforts on media relations, whether outreach to reporters or developing and placing letters to the editor and op-eds. This is a theme that crossed interviews and is also evidenced in the websites and social media feeds of the coalitions. Broadly, the anti-fracking coalition messages were focused on the potential damaging effects of fracking on the environment, the concerns about how fracking could be detrimental to public health, general concerns that fracking was unsafe, and questions about the technology of fracking. Pro-fracking coalition messages focused on the contribution of fracking to the economy and energy independence, general statements that fracking was safe, and questions about academic research that showed fracking effects on the environmental and public health. Figure 4.6 outlines the assertions from media sources from the content analysis that align with the pro- and anti-coalition beliefs in North Carolina and New York.

Most interesting is the fact that elected officials and regulatory agency officials in North Carolina were much more likely to use pro-fracking assertions, while the elected officials in New York were more likely to use anti-fracking assertions. This is likely the single biggest indicator of the policy outcomes North Carolina and New York. It also gives credence to the "media don't matter" critics. However, we must explore the strategic communication actions of the coalition members to develop a more robust picture. At the very least, this content analysis indicates that tracking the way legislators and agency officials are quoted in media stories can reflect what is going on in the policy process.

Figure 4.6 Pro- and Anti- Coalition Messages by Source in North Carolina and New York



X^2 = 683.370, df = 14, p < .00; N=3821. In North Carolina, elected officials used pro-fracking coalition messages 60.2% of the times and anti-fracking coalition messages 20.4% of the time. The other source categories used coalition messages as follows: government agencies (25.5% Pro/10.1% Anti); environment/community (26.9% Pro/66.3% Anti); industry (90% Pro/10% Anti); Scientists (54.6% Pro/78.4% Anti); and Media (86.5% Pro/100% Anti). In New York, elected officials used pro-fracking coalition messages 19.6% of the times and anti-fracking coalition messages 45.1% of the time. The other source categories used coalition messages as follows: government agencies (20.5% Pro/47.7% Anti); environment/community (20.4% Pro/68.5% Anti); industry (68.2% Pro/29.5% Anti); scientists (27.3% Pro/81.5% Anti); and media (47.8% Pro/91.3% Anti).

In North Carolina, even though environmental advocates were quoted more than industry advocates (See Figure 4.1), they were forced to speak to the pro-fracking messages more often than their counterparts in New York were forced to.

As discussed earlier, the coalitions in North Carolina were extremely active during the MEC meetings during the summer of 2014. Consistent messaging was a theme across organizations within the anti-fracking coalitions as well. Frack Free NC, which was started to combat the state legislation, has now shifted its focus to helping local cities and counties pass fracking bans. Perhaps the most telling examples of this were the public meetings held by the Mining and Energy Commission during the summer of 2014. Frack Free NC issued talking

points to people for the meetings, provided statistics on fracking and environmental degradation, and even provided transportation for people to attend the meetings across the state. These efforts paid off, as citizens against fracking made up the majority (and in some cases only) speakers at the public meetings.

Then anti-fracking coalition members in New York used celebrities to draw attention to the issue and motivate its publics. Susan Zimet, director of Frack Action, a local environmental group in New York, discussed the success of Mark Ruffalo in drawing attention to fracking. "The issue was pretty much dead until we brought Mark on board. Suddenly, people started to pay attention" (personal communication, January 10, 2016). Other celebrities who got involved in the fracking debate in New York include Yoko Ono, Josh Fox, and Robert Kennedy, Jr.

In both states, fracktivists piggybacked on larger events to get their message out. These events included protests outside the capital before the State of the State address in Albany, New York, and the annual Moral March and HKonJ People's Assembly in Raleigh, North Carolina. Additionally, advocates staged press conferences and media events outside of fracking meetings. In North Carolina, Frack Free NC held a press conference outside the state capital before the General Assembly session that passed the fast-tracked bill, as well as media events prior to the four public comment meetings held by the MEC. In New York, several localities turned their city council meetings into media events when the council held votes on fracking. According to Joseph Golombrek, Jr., a member of the Buffalo Common Council, sometimes these public events and resulting media coverage could take on a life of their own (personal communication, January 11, 2016). According to Golombrek, Buffalo was going to ban fracking, but they knew they didn't have the votes to get it done, so they were going to start a petition, which the city

council refused to entertain. When his colleagues were wondering what to do get their political momentum, he suggested they turn it into a media event:

> Bill and Sandy were like, “Oh my god this is terrible. The board isn’t going to even do this. Now we can’t bring it forward. How are we going to have our political momentum?” And I was like, “Are you kidding? Bring it on baby. This is it. This is our media moment.” And so we made a huge media moment out of it, that what an unbelievably anti-democratic posture of our town board that they weren’t even willing to listen to hear a petition or have a petition brought to the board. We had a huge forum and rally and media and whatnot related to this. It was, I’m certain, the largest public showing at a board meeting ever. It was well over 300 people we didn’t even fit in Town Hall. We had to go to the Community Center and even with that, it was an over flow, standing room only crowd. (Golombrek, Jr., January 11, 2016)

It worked. All three newspapers from the content analysis covered the Buffalo Common Council “Ban the Ban” Solution, and several other localities passed resolutions using the same language.

What makes the Buffalo case so interesting, though, is that, Buffalo was not going to be directly affected by fracking (McNeil, 2012, October 3). It does not even sit on the Marcellus shale. The fracking ban in Buffalo became about something more, namely the trustworthiness of the Common Council (Golombrek, January 11, 2016). Making fracking an issue of trustworthiness of the town government likely motivated the public more than fracking itself, given that Buffalo would likely not have been affected by fracking operations.

Fracking also quickly became an issue for electoral campaigns at all levels of the government in North Carolina and New York:

> Environmental groups that have attacked in TV ads a handful of Republican lawmakers for their support of fracking are expanding their targets, as promised. The $1 million ad campaign has added Rep. Tim Moffitt of Asheville, Rep. Michele Presnell of Burnsville, Rep. James Boles of Southern Pines, and Rep. Mike Stone of Sanford to the mix. The ads refer to reports of health problems it ties to fracking in Pennsylvania and concludes with some variation of: "Tell them to protect the people next time - not the polluters." Nine environmental groups, with funding from the Natural Resources Defense Council, are behind the ads, which began earlier this year. Those first ads aimed at what it referred to as "the fracking crew": Sens. Chad Barefoot of Wake Forest, Wesley Meredith of

> Fayetteville and Ronald Rabin of Spring Lake. Republicans say it is an attempt to unseat legislators facing re-election campaigns. (Schoof & Jarvis, 2014, July 1).

The ads also garnered a lot of media attention and were shared on social media. As the fracking debate became more contentious, each side sought to delegitimize the other, politicizing the issue and the related scientific and technical information. In fact, the University of Buffalo had to close its research center related to fracking because its close ties to industry caused people to question its research.

As discussed in the literature, part of issues management is the education of publics, particularly those publics that might be spurred into action and get information in front of policymakers in a way that will make them pay attention:

> …what is the best way of getting research and data out into the hands of policy-makers in ways that they might actually use it? Just putting together a publication, sending it out there, does that make any difference? Is it that you form peer-to-peer learning opportunities and you're putting some research onto that table so that people can really engage with it? So, I think you have to rely on a variety of means…People here particularly because it is so controversial, they like being able to interact with someone and ask questions, so again, I think there is value in the print media and that gets sent around. We get a fairly good turnout when we offer an educational program related to gas drilling and I think that has been something that people really appreciate and often on something that is fairly focused as opposed to gas drilling 101-- this community is way past that…most of the people. So, any time we can have an actual speaker, or even do a webinar with the opportunity for people to ask any questions, or people can raise things like: well, what were the assumptions in the study or did you consider this because people are so engaged, and I think in Tompkins County we have a fairly high educational level, there are really people that want to know more and in a good way question things, and want to delve a little deeper, or know a little bit more about what went on behind the decisions that were made. (Brown, personal communication, March 26, 2016)

According to this environmental advocate in New York, they used several different forms of outreach to get their message across. He also highlights the need to consider the knowledge of the publics you are trying to reach. They had to adjust their outreach methods and messages as their publics learned more about fracking to keep them engaged.

One community outreach coordinator for a science-based education organization in New York highlighted the challenges as the community grew more polarized:

> Part of the idea is trying to come up with tools and strategies that an organization interested in public education related to whatever that energy source might be can pick up when there are signs of this stuff emerging and hopefully get out there before the community becomes polarized. Which of course we learned this lesson by getting involved as the community got polarized, and the community is very polarized and a strong pole in Tompkins County is anti-fracking and we try also to avoid that word because there are issues with that. Because we are trying to provide evidence based understanding that is science-based in nature and the science-based term is of course slick water high volume horizontal hydraulic fracturing. But then we don't show up if Google searches when people use the most obvious term for what they are trying to find out about [fracking] so we need to fix that. (personal communication, January 14, 2016)

This particular organization was seeking to provide unbiased information; however, they quickly found out that as the issue became more polarizing, people became more and more suspicious of their motives. Such as this member of JLCNY, who talked about the visits he received from environmental advocates:

> Oh yeah, oh yeah. I said please sit down; I truly want to understand where you get your data from. Because you know they'll sit there and hold up pages of information they've pulled from the internet but of course they don't have proof. You know, they just say "oh, we heard about this" and I keep saying "well, you know I'm going up to Pennsylvania, please get me the name of one of the farmers that has had a catastrophe". And they say "oh, well we don't actually know any. But we saw it on the internet." And I'm sorry…they're just fundraising for their organization. (personal communication, February 19, 2016)

Additionally, the further you get into a debate, people begin to make up their minds and it becomes increasingly hard to change them. This is made more difficult when people are getting their information from other sources, as Woody Stens, director of Keuka Lake Association, a watershed protection agency in New York, pointed out:

> Frankly, this movie coming out tonight, what's it called, The Promise Land?...That will probably have a bigger impact than we've had in all the four years we've been working. Sadly, because I forget the guy's name, the actor…I don't watch that many movies but I did see the one he did about being a student in

> Boston. Can't think of the name of it but it doesn't matter. He's an impressive actor. So, he will…this movie may do well for opening people's eyes. Hopefully, even some of the people who think they're gonna get rich will go and go and see this and begin to see through this but it's very difficult to know what is that Mark Twain says…much more difficult…to convinced a person they've been lied to than …to fool them. Yeah. Once they made up their mind, you can't change it. (personal communication, January 27, 2016).

Movies such as *Promised Land* and documentaries such as *Gasland* can reach people in a way that public education campaigns and even media coverage cannot. However, once a public becomes motivated, grassroots mobilization can be extremely effective. In New York, the timeliness, proximity, and prominence of the fracking issue mobilized the public.

In North Carolina, environmental advocates drove the public interest. Nick, the conservation chair for the Sierra Club, North Carolina Chapter, Capital Group, pointed out that it was public outreach from theirs and likeminded organizations that reached out to people:

> …And most of the time they had also been in touch with an advocacy group. They were either on a list for some other reason and heard about it from the advocacy group or they themselves had gone online…and it's something that I have experienced too, some of these folks were just so turned off by the industry message. Even if they were not rabidly anti-corporate or anything like that. They just felt like the industry message was so clearly phony, such sweetness and light that they, their critical thinking alarms went off and they went online and began investigating it more. So, that's when they would find advocacy groups and initially it was just us, we were the only ones that were really being outspoken about it, but we really tried to get the voices of other groups you know, online as soon as possible and we always tried to connect folks with a local group that was near them to the extent possible. And then the other thing that would happen that would really increase the impact of a presentation is we had folks who either had a close friend or relative in a state like Pennsylvania, Texas, Oklahoma, Louisiana, who'd had some direct experience with it. (personal communication, March 26, 2015)

What is interesting here is that while many people first heard about fracking through the media or public outreach of advocacy organizations, mobilization happened when it was

determined that fracking would affect them personally or it was connected symbolically to a larger issue. Additionally, it is often interpersonal interactions that lead to grassroots mobilization. Coalition members used media to alert their publics to the issue and gain legitimacy; however, other strategic communication efforts, such as public events, were more effective in actual grassroots mobilization.

Discussion and Conclusion

There is an increased focus within the public relations literature on the strategic communication efforts of advocacy organizations and social movements (Taylor & Das, 2010). One of the best ways for organizations to get strategically involved in public policy matters is through issues management (Heath & Palenchar, 2009; Taylor & Das, 2010; Veil & Kent, 2008). Media can be an important part of agenda building and coalition building for activist organizations because they can use the media to gain legitimacy with the public and policymakers (Sobieraj, 2011; Jacobs & Townsley, 2011).

Coalition strength.

This study brings more clarity to the question of what makes a strong coalition (Jenkins-Smith, 2014). The anti-fracking coalitions in both North Carolina and New York were broad-based coalitions that were driven initially by actors involved nationally in the anti-fracking movement. Both coalitions remain active today, though the strategies and tactics have shifted since the policy changes in March (North Carolina) and December (New York) of 2015. By all measures of the ACF and coalition building research—like strength in relationships among members, coordinated strategies, and consistent messaging—they should have been successful. However in North Carolina, the energy industry had strong ties to Republican legislators that pre-dated the fracking debate, and while the pro-fracking coalition was not broad-based nor long-

lasting, it was well funded. Conversely, the pro-fracking coalition in New York failed on all accounts.

This indicates that coalition strength needs to be measured by the strength of the relationships between the coalition and the government officials within the policy subsystem as well as the strength of relationships among the coalition members. Additionally, a well-run strategic communication campaign that closely aligns with direct lobbying efforts makes for the most successful coalition. However, at least in North Carolina and New York, advocacy groups believed controlling the media message could serve as the guiding force for a larger strategic communication campaign, especially for policy issues such as fracking.

Media relations and public outreach.

This study outlines the importance of media relations to issues management for an organization, supporting claims made in the literature (i.e. Taylor & Das, 2010; Heath & Palenchar, 2008). If media are not a direct influence on policy change, why do stakeholders spend so much time and effort on media relations? First, it is a relatively low-cost and low-resource option, especially relative to other forms of outreach such as advertising. Second, it can be used to mobilize volunteers and interested publics. For the Sierra Club, for example, the writing of letters to the editor, while they may not have much influence in the policymaking process, help the volunteers feel involved. Likewise, when Molly Diggins, the Sierra Club, North Carolina chapter director, wrote an op-ed that was published in the *Charlotte Observer*, it was leveraged to motivate the volunteers.

Additionally, media can be effective early in a policy debate, especially if an issue is relatively new and people are not familiar with it. In the case of New York, while fracking was a new technology, debates over drilling on the Marcellus Shale had been going on for years.

Elected officials, regulatory officials, and the public were primed for the fracking debate, and public opinion fluctuated less. In North Carolina, however, natural gas drilling and fracking were new topics. Thus, as shown in Chapters 1 and 2, media were effective in shaping the initial public opinion, with poll results evolving from 50% not knowing about fracking to three-quarters of respondents having an opinion. This is likely why the pro-fracking policy entrepreneurs in the state legislature kept the issue out of the media for as long possible.

Public education is also a main focus of advocacy groups in a policy debate. A main component of public education and public outreach is credibility. Advocacy groups seek to develop their credibility so the publics they reach out to trust their messages. Often media can be used to develop legitimacy, or conversely delegitimize the other side. Relationships with trusted organizations are another way groups can develop legitimacy.

Playing the long game.

One of the mistakes I made early in my analysis of these two case studies was viewing the legislation as the end result of the process. However, as has been evidenced since January 2016, in both cases it is likely only the beginning of the process. In North Carolina, for example, several local elected officials lost their elections in part because their constituents felt they did not fight hard enough to keep fracking out of the state. In New York, the local ordinances that banned fracking were used to put pressure on the state government. While attention to fracking rises and falls on the media and public agendas, motivated actors such as Frack Free NC continue their strategic communication efforts. The policy subsystem continues to churn, with actors jockeying to refine the definitions of the policy issue and waiting for the issue to top the media, public, and policy agendas again.

Chapter 5 – Toward a Better Understanding of Science, Media, and Strategic Communication in Public Debate about Environmental Policy Issues

In this dissertation, I set out to better understand the role of science, media, and strategic communication in public debate about fracking, drawing on the Advocacy Coalition Framework. While the ACF is a robust framework, one main limitation is its lack of a full conceptualization of the media, an issue not just with the ACF, but also with public policy research as a discipline (Crow, 2010; Shanahan et al., 2011; Wolfe 2012). In addition to a better conceptualization of the media, policy researchers have called for an expanded understanding of science and policy analysis within applications of the ACF, as well as a better understanding of coalition formation, maintenance, and resource allocation (Jenkins-Smith et al., 2014). In bringing interdisciplinary research from media effects, political communication, sociology, and public relations to this framework, I have been able to analyze the different factors we must account for when studying public debate over environmental policy issues, such as the actions of stakeholders, the role of the media, and the strategic use of scientific and technical information in developing a policy image. While incorporating the assumptions of the ACF and mindful of the concerns of incorporating theoretical approaches that include a stages heuristic into a systems-based framework (Weible et al. 2009), I did find that the roles of scientific and technical information, media, and strategic communications did fluctuate depending on where the subsystem was in the policy process.

In Chapter 2, I showed that while science and technical information about fracking may operate from a science or policy perspective when fracking is not high on the public or media agendas, it can become quickly and easily politicized once it becomes a matter of public debate, which is consistent with past research (i.e. Oreskes, 2004; Pielke, 2004). This politicization can be the result of actual scientific uncertainty, which is a hallmark of the scientific process, but it can also be a result of the willful or unknowing distribution of misinformation. While stakeholders accept research that supports their core beliefs, they reject or vilify research that does not. While this may seem to indicate that fracking policy is better developed outside of public scrutiny, it is this public scrutiny that also keeps governmental powers in check. In fact, it is at the very heart of the vaunted "watchdog" role of the press.

In Chapter 3, I further explored the role of the press. I found that media mattered in public debate on fracking in both New York and North Carolina, particularly in bringing it to the top of the policy and public agendas and framing the debate early on in the policy process. While journalists have been criticized for their dependence on government sources and their focus on controversy and strategic actions of political elites (i.e. Freidman, 2015), it turns out many actors within the fracking policy subsystem use the media to track the actions of political elites, as well as actors from opposing coalitions. Additionally, as in science, media are simultaneously trusted and distrusted, depending on how well they align with the core beliefs of a stakeholder. Finally, there is a blurring of the lines between news media and other media, and at least in the case of New York and North Carolina, a decoupling of the media from public opinion, a change from previous research (i.e. Herbst, 1998).

In Chapter 4, I examined the strategic communication actions of stakeholders in the fracking policy subsystems in North Carolina and New York. I showed that coalition strength

needs to be measured by the strength of the relationships between the coalition and the government officials within the policy subsystem as well as the strength of relationships among the coalition members. This provided a more nuanced view of coalition strength than previous research (i.e. van Dyke & McCammon, 2010; Heath & Palenchar, 2011). Additionally, I outlined how a well-run strategic communication campaign that closely aligns with direct lobbying efforts make for the most successful coalition. I also show how, consistent with the issues management literature (i.e. Taylor and Das, 2010) advocacy groups believed controlling the media message could serve as the guiding force for a larger strategic communication campaign, especially for policy issues such as fracking.

With all of these aspects in mind, I have developed the following model that accounts for the interaction of media, science, and strategic actors within the framework of the ACF (see Figure 5.1). Taking the guidelines of Weible et al. (2009) into account, my model assumes coalition beliefs are the casual drivers as strategic actors seek to influence policy image throughout the process. Additionally, I have incorporated other assumptions of the ACF into my model by focusing on the policy subsystem, coalition messages and resources, scientific information and including any actor who influences (or attempts to influence) the policy image.

Figure 5.1 Model for Understanding Science, Media, and Strategic Communication in Public Debate

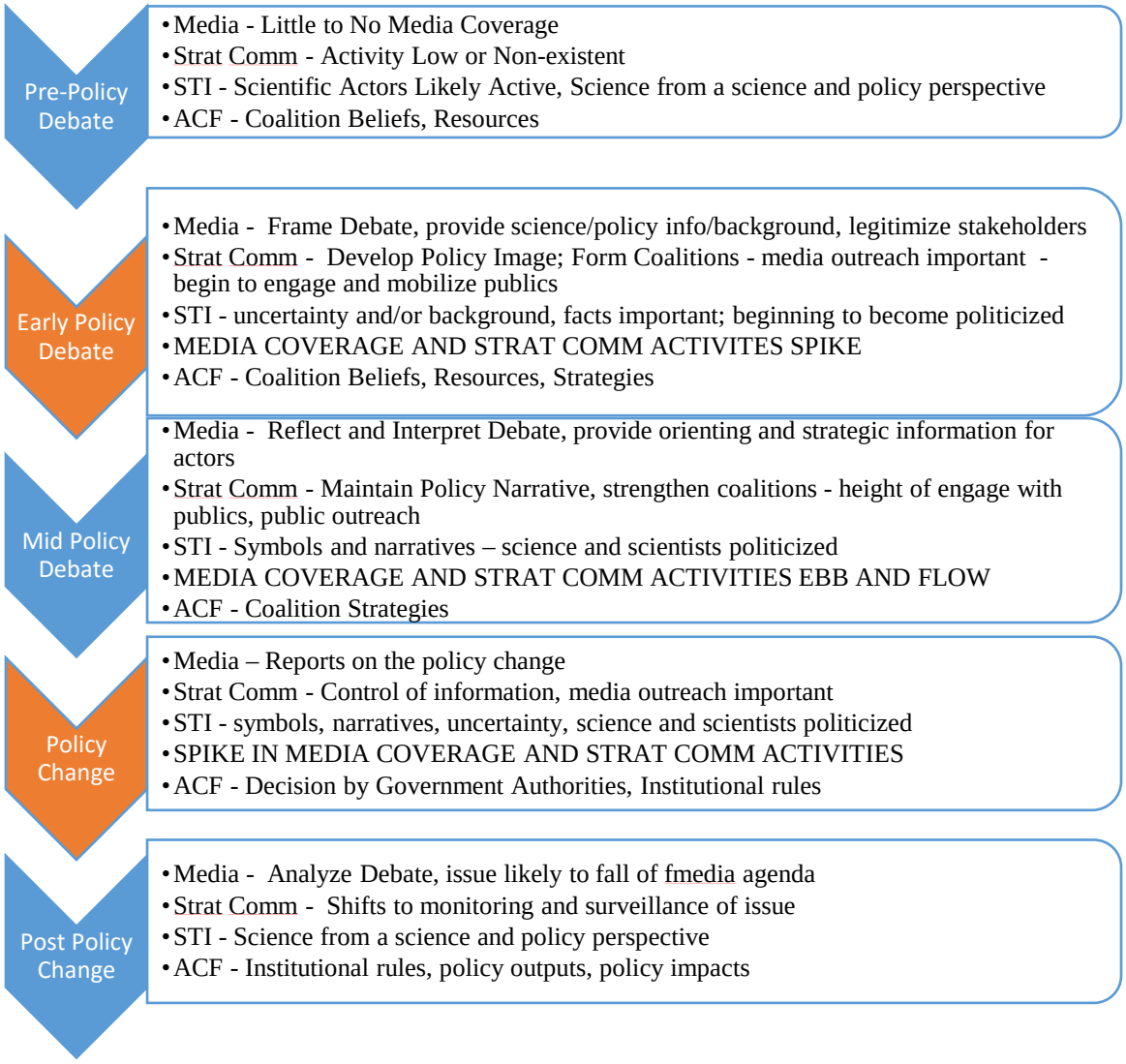


Figure 5.1. This model is designed to fit in with the public subsystem box of the Flow Diagram of the ACF (see Figure 1.4)

Pre-Policy Debate

This phase aligns with Coalitions, Beliefs, and Resources in Figure 1.4. There was little to no media coverage, strategic communication activity was low, and science operated from a science and policy perspective. However, as indicated by my research, actors, especially those either at the fringes of a policy subsystem or with their focus on another policy subsystem,

expected the media to serve a "watchdog" role, keeping an eye on governmental action and alerting them when they need to pay attention to a policy issue (personal communication, June 15, 2014; June 22, 2014; Ciesielski, March 21, 2015; Downs; January 31, 2016).

Early Policy Debate

As an issue enters public debate, media can help frame the debate, provide scientific background, and legitimize stakeholders (Nisbet & Newman, 2015). In the case of both New York and North Carolina, focusing events caused media coverage to spike. In New York, the main focusing event was the release of the Draft Supplemental Generic Environmental Impact Statement (SGEIS) followed by the public comment meetings held by the Department of Environmental Conservation (Nearing, 2014, January 5). In North Carolina, it was the passage of Senate Bill 820, which created the Mining and Energy Commission to develop fracking regulations after a contentious vote within the legislature (Murawski, 2012, June 4). While not the only influence, media helped frame the issue and shape public opinion from not knowing about fracking to supporting and then ultimately being opposed to it in both states.

Many of my interview respondents credited *Gasland* and the symbol of the flaming faucet with bringing public attention (and controversy) to the fracking debate (personal communication, February 19, 2016; January 20, 2016; April 22, 2015; Cruger, 2011, February 12). *Gasland* also highlights how difficult it is to separate news media from other forms of media, as well as strategic communication actions. Many groups in North Carolina and New York held public showings of *Gasland*, it was covered in the media, and it was shared on the Internet.

Mid-Policy Debate

This refers to the period between when a policy issue first becomes part of the public debate and a when policy change occurs. This can take years (three in case of North Carolina,

seven in the case of New York). My content analysis and interviews showed that when scientists entered the public debate, their motives were often questioned, such as with the Duke scientists or Dr. Terry Engelder (Editorial, 2014, August 13; Murawski, 2014, September 16; December 17, 2015). Additionally, in my interviews, actors pointed out that even the peer-reviewed literature cold be questioned, particularly if it was funded by industry (personal communication, January 14, 2016; McNeil, 2012, October 3). Part of this came about as the fracking debate unfolded and it quickly became a symbol of other issues, such as distrust of government, corporations, environmentalists, and even science itself (personal observations August 20, 2014; August 22, 2014; and September 12, 2014; Murawski, personal communication, October 28, 2016). Policy subsystems by design operate outside of public scrutiny most of the time, and when public attention comes mid policy debate, it can lead to a disconnect between science, the public, and policymakers (Nelkin, 1995; Oreskes, 2004; Sarewitz, 2004; Pielke, 2004; Jasanoff et al., 1998).

Policy Change

The policy change is also likely to be marked by a spike in media coverage. In North Carolina, media coverage spiked when the legislature fast-tracked fracking and permitting was allowed, however it was not as high as when the initial legislation was passed (See Figure 1.2). In New York, the announcement of the fracking ban garnered as much attention as the initial release of the environmental impact statement, which was the focusing event for fracking policy there (See Figure 1.3). There will be a burst of media outreach and politicization as stakeholders seek to control the policy image in light of the policy change. Media will serve as both an actor and a resource.

Post-Policy Change

Media will spend some time analyzing the policy process before moving on to other issues, while many stakeholders will do the same. Strategic communication actions will shift to monitoring the policy subsystem, and science will likely shift back to a science or policy perspective. This will remain until the next policy change occurs. The post-policy change phase will look similar to the pre-policy debate phase.

Conclusion

This dissertation focused on three main factors that influence public debate of environmental policy issues as fracking policy developed in New York and North Carolina: the strategic communication actions of advocacy coalitions, the role of the media, and the use of scientific and technical information. The fracking debate is an extremely controversial debate that has seen the politicization of science in the face of scientific uncertainty and an increase in interested stakeholders. I explored how the media helped frame the issue as a choice between environmental effects and economic development as these stakeholders framed scientific evidence as useful or suspect, depending on its relation to their core beliefs. Additionally, I explored how symbols and narratives were useful in framing the debate, with fracking itself becoming a symbol of the political process. I also explored the influence of advocacy coalitions depending on their memberships, relationships, and resources.

In bringing interdisciplinary research from media effects, political communication, sociology, and public relations to this framework, I have been able to analyze the different factors we must account for when studying public debate over environmental policy issues, such as the strategic communication actions of stakeholders, the role of the media, and the deliberate use of scientific and technical information in developing a policy image. Media, strategic

communication, and scientific and technical information played myriad roles in the public debate surrounding fracking. This model provides a structure for examining the main factors of the public debate that influence public policy for environmental (and other) issues that have strong scientific components. It also provides a mechanism for better understanding not only how the roles and influence of these factors can shift during the course of the debate, but also how they can shift in relation to each other. Because I focused on times when these factors were most active, this dissertation focused on the early- and mid- policy debate phases up to a time of policy change.

This dissertation focused on two cases that had two distinctly different policy outcomes. New York banned fracking, while North Carolina fast-tracked fracking. While the two cases showed similarities (i.e. the makeup and actions of the advocacy coalitions), there were two distinct differences. First, from a policy perspective, the policy venues in each state were different. The fracking policy development in New York remained largely within the regulatory venues of the Departments of Environmental Conservation and Health, while in North Carolina fracking policy was developed initially in the legislative arena, and even when it moved to the regulatory arena the legislature remained heavily involved and associated with fracking policy. Additionally, the pro-fracking policy supporters and coalition within North Carolina managed to control the framing of the policy image, as evidenced by the greater use of the pro-fracking coalition messages by government officials in media coverage in North Carolina. New York saw the opposite – government officials were more likely to use the anti-fracking coalition messages. Additionally, while the anti-fracking coalition in North Carolina was larger and more vocal, the pro-fracking coalition had stronger relationships with the Republican-led state legislature. This was not the case in New York.

Moving forward with this model, I will explore fracking policy in other states, specifically examining the coalition membership and relationship to government leaders. Additionally, I would like to explore fracking policy in states such as Pennsylvania or Colorado, where fracking is currently implemented and research is being done. Finally, I would like to explore the role of scientific and technical information, media, and strategic communication in other environmental policy venues, such as water resources and water infrastructure, which traditionally are not as controversial as fracking, nor have captured as much attention from the media or the public.

APPENDIX I - INTERVIEWS AND FIELDWORK

Interviews

Zimet, Frack Action New York, January 10, 2016
Nick Cutri, Councilmember and Environmental Parks Committee Chair, Canandaigua Town Council,
Joseph Golombrek, Jr., Buffalo Common Council, January 11, 2016
Dennis Harkawik, environmental lawyer, January 11, 2106
JLCNY member, February 19, 2016
Woody Stens, Director of Keuka Lake Association, January 27, 2016
Community outreach coordinator science based education organization, January 14, 2016
Fred Lebrun, columnist, *Albany Times Union*, November 6, 2015
Chris Churchill, reporter, *Albany Times Union*, November 9, 2015
Robert M. Ciesielski, chair of the Niagara Group of Sierra Club, Atlantic Chapter, March 21, 2015
Roger Downs, conservation director for the Sierra Club Atlantic Chapter, January 31, 2016
Eight interviews with county environmental and health directors

Interviews/Observations – North Carolina

Interviews

Kirk Smith, Lee County Commissioner, February 5, 2015
Darryl Moss, Mayor, Creedmoor, NC, December 14, 2015
John Murawski, reporter, *Raleigh News & Observer*, October 28, 2015
Theresa Vick, Blue Ridge Environmental Defense League, January 7, 2016
Hope Taylor, Clean Water NC, April 22, 2015
Nick Brown, conservation chair, Sierra Club North Carolina Chapter, March 26, 2015
Chelsea Barnes, co-chair, Sierra club North Carolina Chapter, Capital Group, March 11, 2015
Six interview with county environmental and health directors

Fieldwork

General Assembly Session, Raleigh NC, May 27, 2014
Mining and Energy Commission Public Comment Meetings, August 20, 2014; August 22, 2014; September 12, 2014
Moral March on Raleigh & HKonJ People's Assembly, February 14, 2015
Offshore Drilling Forum, March 12, 2015
Sierra Club Capital Group Executive Committee Meetings, February 5, 2015;
Sierra Club Capital Group Monthly Meetings March 19, 2015; April 16, 2015
Atlantic Energy Forum, March 16, 2016

APPENDIX II - INTERVIEW GUIDE

General Questions

When did you first learn about the issue of fracking?

Who did you hear about it from?

What did you do next to find out more information?

How much did you know about fracking before the release of the DENR report and/or SB 820?

Let's talk about (possible choices for the interview):

- Session Law 2011
- Release of DENR report
- Development, introduction, and passing of SB 820
- Gov. Perdue veto
- Override of veto (including Carney's miscast vote)
- Development, introduction, and passing of SB 76
- Other events as they develop…

Possible Questions:

What was your reaction?
What did you do next?
Who did you call? Who did you meet with?
What was important to you/your organization?

Media Specific Questions

Take me back to the first time you decided to write about fracking – what did you think the story was at first?

How did you go about researching the story?

What were the specific types of sources of information you felt you needed to capture the story?
- For industry representatives – who did you call?
- For environmental representatives – who did you call?
- Citizen views – how do you go about getting those?
- How about view from policy makers?

How did your idea of what the story was evolve as you did your research for that first story?

As you started reporting more on the issue, could you describe anything that you found surprising?

How about individuals and organizations that reached out to you proactively – can you describe how that process worked?
- Who were the most proactive?
- How did they reach out to you?
- What where their messages?

How much did the national coverage of fracking, or coverage in other areas, influence your research?
- Did you reach out to anyone in areas where they've been practicing fracking for a while? If so, who?

Policymaker Specific Questions

How much did you know before the release of the DENR report and/or SB 820?
- Had you already formed an opinion on fracking prior to the report's release?
- Did the report change your view?

What were the main influences for you in your decision on fracking in North Carolina/vote on SB820/decision to override the veto?

What made you to decide to override the veto when you had previously voted against SB 820?

How much did you know about fracking legislation and/or operations in other areas, such as Pennsylvania?
- How closely were you following debates in other areas, or the national debate? What issues do you think North Carolina has that are similar to some of these other areas?
- What issues are unique to North Carolina?

Can you describe when you first realized that fracking was going to become an important issue for North Carolina?

In terms of the fracking debate, what did you feel were the main issues?
- How did you feel your opinion aligned with your party/your constituents/public opinion?

Where did you go to gauge public opinion on the issue?
- How important was it to you to align with public opinion/your constituents/your party?

What did you view as the role of media in the debate?
- Can you talk about a time you used the media as a source of information?
- As a way to reach out to certain groups?
- As a way to further the debate with your opponents?

Did you have a PR or communications plan in place?
- Can you walk me through the plan?
- What worked well/did not work well for you?

When you did engage the media, how accurately did you feel your views were reflected?
- How accurately did you feel the debate as a whole was reflected?

What did you find most surprising about the media coverage?
- What about non-media events?

Advocacy Group Specific Questions (these will vary, depending whether the group has an environmental, business, community focus)

How much did you know before the release of the DENR report and/or SB 820?
Had you already formed your opinion on fracking prior to the report's release?

When did you first realize fracking was going to become an issue in North Carolina?
How closely were you following debates in other areas, or the national debate? What issues do you think North Carolina has that are similar to some of these other areas?
What issues are unique to North Carolina?

In terms of the fracking debate, what did you feel were the main issues?
How did you feel your opinion aligned with public opinion?

Where did you go to gauge public opinion on the issue?
How important was it to you to align with public opinion?

What did you view as the role of media in the debate?
Can you talk about a time you used the media as a source of information?
As a way to reach out to certain groups?
As a way to further the debate with your opponents?

What did you view as the role of scientific information in the debate?
Can you talk about a time you've used scientific information?
As a way to reach out to certain groups?
As a way to further the debate with your opponents?

Did you have a PR or communications plan in place?
Can you walk me through the plan?
What worked well/did not work well for you?

When you did engage the media, how accurately did you feel your views were reflected?
How accurately did you feel the debate as a whole was reflected?
Can you talk about a time you've felt misrepresented in the media?

What did you find most surprising about the media coverage?
What about non-media events?

Academic/Research Specific Questions

How did you get interested in fracking research?

How often do you speak to the media about fracking? Could you describe the last time you spoke to the media? How knowledgeable do you find journalists are when they contact you? What are your thoughts on {recent media coverage on fracking}

In terms of the fracking debate, what did you feel were the main issues?
    How did you feel your opinion aligned with public opinion?

Where did you go to gauge public opinion on the issue?
    How important was it to you to align with public opinion?

What did you view as the role of media in the debate?
    Can you talk about a time you used the media as a source of information?
    As a way to reach out to certain groups?
    As a way to further the debate with your opponents?

Did you have a PR or communications plan in place?
    Can you walk me through the plan?
    What worked well/did not work well for you?
When you did engage the media, how accurately did you feel your views were reflected?
    How accurately did you feel the debate as a whole was reflected?
What did you find most surprising about the media coverage?
    What about non-media events?

APPENDIX III – CODING PROTOCOL

Introduction

This study will look at newspaper coverage of fracking in North Carolina and New York to examine how the issue has been defined in the media and by whom. Fracking is defined in the media by the frames and sources used by a journalist when they write about fracking. Coders will read newspaper articles from state capitol and other major newspapers in New York and North Carolina. The headline/lead frame will be assessed by reading the headline and lead of the story (up to the first five paragraphs to determine the frame). Sources will be assessed by category (i.e. business, environmental advocate, agency, politician), level (state, local, national), assertions they make regarding fracking, and tone.

Concepts and Definitions

Fracking: Fracking, the common term for hydraulic fracturing, is a method of recovering natural gas in which a mix of water and chemicals are injected at a high pressure into underground shale deposits to release the natural gas by creating fractures in the rock (US Environmental Protection Agency 2013). Proponents of fracking point to the economic benefits and argue that it's a safe method for extracting natural gas, a cleaner alternative to coal and an untapped resource in many areas of the United States, while opponents argue that the process produces significant environmental and health effects, such as contamination of water supplies and air pollution (Davis & Hoffer 2012). While fracturing techniques have been in use in the United States since the 1950s, large-scale shale production began in the 1980s and 1990s, and it has only been recognized as a "game changer" for the US energy market since around 2007 (US Energy Information Administration 2011). **Fracking may also be referred to as shale gas development or natural gas development.**

News frame: "A frame is a central organizing idea for news content that supplies a context and suggests what the issue is through the use of selection, emphasis, exclusion, and elaboration (Tankard, Hendrickson, Silberman, Bliss, and Ghanem, 1991). Frames can be developed through words or phrases used or topics covered.

Source: A source is a specific, named person that gives information to news reporters. Sources can be credited with information via direct quotes, which will use quotation marks, or paraphrased with word such as said, claimed, according to. A source's state of mind can also be credited, with words such as thinks, feels, wants. General terms, such as researchers say, or quotes of reports or documents are not included in this analysis.

Valence/Tone: This refers to whether the source views fracking positively or negatively. This refers to whether the source views fracking positively or negatively. The tone must be directed at fracking and it must be explicitly indicated, such as "fracking is good for economic development" or "fracking damages the environment."

Procedure

Each assigned story should be read to identify the following variables. The coding protocol is designed as an introduction to the study and variables, as well as a reference for additional detail as needed. The coding sheet with appendices is designed to provide the information needed for coding once you are familiar with the protocol.

V1. STORY IDENTIFICATION (enter assigned number)

V2. NEWSPAPER CODE:

0. Albany Times-Union
1. Buffalo News
2. Canandaigua Daily Messenger
3. Raleigh News & Observer
4. Charlotte Observer
5. Southern Pines Pilot

V3. STORY DATE: (MM/DD/YY)

V4. STORY SECTION:

0 = Main News
1 = Local/Metro
2 = Business
3 = Politics
4 = Editorial (editorial from the newspaper with no author)
5 = Op-Ed (authored article by a newspaper columnist or outside source)
6 = Other (write in)

V5. MAIN FOCUS. This will help determine the main focus of the story. You will first identify if frack or fracking appears in the headline or first paragraph, as well as how many times fracking appears in the story. Then you will determine the main focus of the story. Most will be fracking, but if it is not fracking, note the main focus of the story.

0 = Energy (General)
1 = Fracking
2 = Environmental Policy
3 = Political Race/Election
4 = Year Review/Look Ahead
5 = Legislative Overview
6 = Other_____

V6A-B. FRAME. First determine how the issue framed in the headline and beginning of the story (up to five paragraphs). Please keep in mind that NONE of these frames may be present. Then determine if other frames are present in the story.

0 = environmental effects – focuses on the environment (Earthquakes Related to Fracking Operations; High Levels of Mercury Found in Water; Study Highlights Detrimental Environmental Effects)
1 = economic development/competiveness – focuses on economic issues and costs of solutions, also stories about mineral rights (examples: State Seeks to Prevent Companies from Underpaying Landowners; State Looking at How to Tax Fracking Companies) –
2 = social progress – focuses on quality of life or a way to solve problems – focuses more on community aspects, not just environmental or economic
3 = scientific/technical uncertainty – debate within the scientific community or industry; calls for more data, further research; questions of research study results (Health Effects Claims Unfounded; How Much Gas is Available for Fracking?)
4 = conflict/strategy – focuses on who is winning or losing the debate, especially regarding passing legislation or implementing regulations; focus on protests and other events rather than the subject of the events; discussion of strategy; focus on disagreement between to two sides (Sierra Club Claims Fracking Bad For Environment, Industry Disagrees; Environmental Coalition Names Three Senators in Ad)
5 = scientific/policy background - general background, recapitulation of "known" results or findings
6 = middle way/alternative path - focus on balance, need for taking things slow (examples: A Welcome Caution Shown on Fracking)
7 = government administration – (Legislature Names Panel to study Fracking) – focuses on the legislation without invoking controversy or looking at tactics
8 = public health – focuses on public health effects of fracking rather than environmental effects
9 = none/other

V7-V19. Sources. For the top four sources, as they appear in the story, determine which category, level, assertions, and tone are attributed to that source. For op-eds, use Source 1 for the author attributes, and sources 2-4 for attributed sources within the op-ed.

V7. SOURCE CATEGORY. A source is a specific, named *person* who gives information to news reporters. Sources can be credited with information via direct quotes, which will use quotation marks, or paraphrased with word such as said, claimed, according to. A source's state of mind can also be credited, with words such as thinks, feels, wants. Generalities, like scientists say, researchers say, or industry representatives say would NOT count as a source.

0 = Government – Elected Official – This includes the elected official or statements or lawsuits on behalf of the individual from a spokesperson or lawyer.

1 = Candidate – This would be a candidate in an election or a spokesperson for that candidate, including elected officials speaking as part of a campaign versus as part of governing.

2 = Government – Agency - This includes statements of a lawyer on behalf of the organization.

3 = Environmental Advocate – This would be someone working for an environmental organization or issue. Someone attending a protest would be considered an advocate. This includes statements of a lawyer on behalf of an organization or individual that falls within this category.

4 = Industry Representative or Industry Advocate – This would be an official representative of a fracking company or industry group. This includes statements of a lawyer on behalf of an organization or individual that falls within this category.

5 = Social/Community Advocate - this would be someone working for an organization or issue about protecting the community regarding issues other than the environment. Someone attending a protest would be considered an advocate. This includes statements of a lawyer on behalf of an organization or individual that falls within this category.

6 = Citizen – This would be a local citizen asked to speak about the issue, but not attending a protest or specifically advocating on the issue. They could be attending another kind of event though (i.e. a debate or a public meeting). This includes statements or lawsuits on behalf of individuals and/or town residents.

7 = Scientist/Academic– This would include any scientist or academic providing independent research or comment. This also includes scientists for the USGS and scientists working for Institutes at universities.

8 = Media– Usually columns written by journalists.

9 = Landowner

10 = Other (write in)

V8. SOURCE ASSERTIONS:

0 = Need to protect environment– such as water contamination or air pollution from fracking operations
1 = Need to protect public health – if human/public health effects are mentioned
2 = Need to contribute to economy – such as focusing on the economic benefits of fracking for the community and/or the state
3 = Need for energy – points to fracking as a means to energy independence, fracking as a "bridge" in US energy policy, fracking as a better energy alternative
4 = Quality of life issues – such as highlighting the stress of fracking operations on communities, or effects or benefits of fracking that go beyond environmental effects or economic benefits
5 = Questioning science of fracking – such as questioning the amount of natural gas recovered by fracking, or whether the costs outweigh the benefits, or noting deficiencies in studies showing fracking is safe
6 = Questioning science of environmental effects – such as noting deficiencies in studies showing fracking degrades environment, benefits outweigh costs
7 = Fracking Administration – looking at the rules of fracking, including the ability of the state to regulate fracking
8 = Fracking is Safe - general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking
9 = Fracking **is Unsafe** – general assertions about safety of fracking, without specific mentions of science or technology or specific effects of fracking
10 = Fracking as a moral issue – such as calling fracking unethical or immoral, questioning the morality or ethics of energy companies, government, or environmentalists
11= Need for precaution – such as invoking the need to proceed carefully or do more study in light of uncertainties related to fracking and/or environmental research
12 = A call for working together – calling on "both sides" (i.e. Democrats and Republicans, Government and Industry, Environmentalists and Industry and/or government) to work together for the good of the community and/or state
13 = Distrust of the other side – questioning the actions or motivations of their opponents; also questioning if the other side knows what they are doing; also mentions of not knowing what's in in fracking fluid
14 = Other_____

V9. SOURCE TONE: For each source determine the tone. There needs to be a STRONG ASSERTION that fracking is good or bad for there to be a pro- or anti-fracking tone. The default should be neutral.

0 = neutral
1 = pro-fracking
2 = anti-fracking

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